LIBRARY

Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Sound Waves, Telephone Magazine and The Telephone

Vol. XVIII CHICAGO, SATURDAY, JULY 24, 1909 No. 4

PUBLISHED EVERY SATURDAY BY THE

Telephony Publishing Company

Monadnock Block, Chicago

Telephone Harrison 2951

H. B. McMeal, President F. S. Kenfield, 1st Vice-President
W. H. Graffis, 2d Vice-President H. D. Fargo, Secretary-Treasurer

Edited by H. B. McMeal and Franklin H. Reed

The present publication comprises

Vol. 57	The Telephone	No. 4
Vol. 34	Telephone Magazine	No. 4
Vol. 20	American Telephone Journal	No. 4
Vol. 18	Sound Waves	No. 4
Vol. 18	Telephony	No. 4

TERMS OF SUBSCRIPTION:

United States, Cuba and Mexico.....per year, $3.00
Canada 4.00
Other Foreign Countries within the Postal Union..... 5.00

NOTICE TO ADVERTISERS

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements accepted up to noon of Monday for the paper dated Saturday of the same week.

Copyright, 1909, by Telephony Publishing Company

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1879.

CHICAGO, SATURDAY, JULY 24, 1909

CONTENTS.

Editorial 71, 72
A Target Range Telephone Line. By M. C. Wilson..... 73
Rate Making for Public Utilities. By Halford Erickson..... 75
The Production of Small Variable Frequency Alternating Currents. By B. S. Cohen..... 78
Apparatus for Alternating Current Measurements..... 79
A Novel German Loud Speaking Mine Telephone. By Frank C. Perkins..... 80
Letters on Practical Subjects..... 82
Practical Questions and Answers..... 83
Telephone Law. By A. H. McMillan..... 85
News of the Week.....86, 87, 88
Meeting of Executive Committee of International Association.. 86
Merger of Competitors in Pennsylvania May Be Set Aside..... 88
Telephone Patents. Conducted by Max W. Zabel..... 89
In the Manufacturing Field..... 90
Condensed News Reports.....92, 93, 94
What They Say About Us..... 94

The Forthcoming Niagara Falls Conference.

Things are going ahead in the Independent telephone business. The International Association is alive to the signs of the times, and is planning some new moves. The Executive Committee met last Saturday and had a mighty good session. They went right in for business, and, although the session lasted from morning until late in the afternoon, there was so much going on that nobody dared suggest an intermission for luncheon. So a good deal was accomplished. A full report of the meeting has not been made public, but it is announced that it is to be followed by a conference at Niagara Falls on September 4, 5 and 6.

At this conference there will be present at the formal meetings not only the Executive Committee and some other standing committees of the International Association, but the advisory board. In addition to this the executive committee of the International Association will send forth, through the press, an open invitation, addressed to all Independent telephone men who are interested in the general progress of the movement, to be present during the conference. It is probable that the greater part of the meetings will be open, only a few important matters being discussed in executive session.

It is a fact that the Independent telephone business is in better shape at the present time, the country over, than it has ever been before. Indications point to a period of growth and solidification for the next two years, and now is a good time for every one to get into the game for all he is worth, and help push things along.

Plans will be made for a big convention, to be held in the early winter, during the conference at Niagara Falls and a good deal of valuable information will come out for a telephone man from any state.

Besides, Niagara Falls, on these dates, will be an attractive place to visit,—none better in the country—and the trip can be made at a reasonable expenditure, as railway and hotel rates will be low. So there is every reason to anticipate that the open invitation of the executive committee will be accepted by a large number.

Money in Prophecies.

We used to know a good many telephone managers who entertained a poor opinion of "engineers." They believed, with some reason, that it was a waste of money for them

to hire a man to lay out their plans, and then spend their own time telling him the various factors entering into the situation, and the real significance of each. As a matter of fact it was, as they said, better for them to do their own guessing, and some of them made money because they were—no, *not* good guessers, but good investigators—with the ability to draw logical conclusions from known facts. If these managers had in the first place provided themselves with a little more training in pure science, and retained all their other abilities which made them successful in business, they would have been the kind of engineers who would have earned their money, and not been a drag.

The term "telephone engineer" has suffered from the policy of bestowing titles instead of raises in salary. We have heard that at one time a company holding a monopoly not very far from Washington, D. C., had on its staff "engineers" at a salary of $50 per month. But putting the tag on the wrong package does not alter the qualifications of the real goods. Where money is made in the telephone business, it is going to be made in the future from plants which are well engineered. We have all seen, over and over again, that it wastes money to build too small. We can all prove, as Mr. Owens indicated in his admirable International convention paper, printed in this journal last week, that it wastes money to build too big. A real engineer has training and experience which enables him to estimate closely on future requirements—and the nearer he builds to a size which stands the actual test of time, the more money he makes for the stockholders. The dividends depend upon his trained skill in prophecy.

Are You An Assistant?

Are you an assistant collector, assistant manager, assistant wire chief, assistant foreman, or assistant anything else? If so, how much of an assistant are you? Or. to put it in another way, of how much assistance are you?

Perhaps you are just out of a technical school and full of analytic geometry, least squares, thermo dynamics or other stuff which will have to be temporarily retired to a remote corner of your brain to make room for a little common sense. And your boss seems very old fashioned, and, possibly, compared with yourself, rather "thick." You are young and ambitious and you want to improve and reform the telephone business by changing the records or apparatus.

For instance, should you be an assistant wire chief you may have ideas about improving the switchboard; so, with about half an understanding of the type as it is, you sketch up your marvel and take it to the boss. He, of course, should be staggered by your profundity, and should take you to his heart with a "Bless you, my boy, bless you!" But he doesn't. He just looks it over and remarks: "There may be something in it," and lays it to one side. If he has time he may go into it more carefully with you, and show where your idea is a mouldy old chestnut, disapproved for good practice years ago. In either case, he knows that the best brains in that branch of telephone work have been on the job for about twenty years and the probabilities are that your idea is already covered by letters patent. Circuit and switchboard designers are born, not made in schools. Hard study may bring an understanding of existing circuits to anyone with the basic technical education, and of that he should be very proud, but that he will astonish the telephone world at the very first is a faint and far cry from the probabilities. Your boss, perhaps, has grown bald or gray in the business. He has climbed poles in storms, he has made shockers out of induction coils in the old back shop, he has cleaned gravity batteries until his hands were sore for days, and he has come to the conclusion that to do the task in hand and do it accurately is better than being a village Edison. Many a son has been ruined by his parents because when he put in a door bell they tried to make him a Tesla.

So, perhaps, the boss will take you in hand and advise you that to make the daily tests on toll lines, to be promptly on the work, to keep the charging machine clean, and to take all the detail of routine off his hands, is what he wants and needs. He won't tell you the story of his life but, if you have any sense, you will see that you are just an intellectually unlicked cub. The boss won't tell you that he has been in the business so many years, that he gets tired more easily now-a-days, and he wants a young fellow like you to be an assistant to him. But if you are a real assistant, his heart will be full of gratitude.

If you are an assistant manager, the office records may seem very crude to you. You have some ideas about card records and loose leaf ledgers and filing cases that would make the present system look like Si Smith's grocery store day book in Jaytown. That it might cost a thousand dollars is a mere incident, deserving only momentary consideration. Be that as it may, you take it up with the manager, and, if he is not too busy, he will explain to you that the human proposition is the one you are always up against rather than the material one. That accurately kept old fashioned records in which he can find what he wants at once are better than changed ones; that the clerks understand the present records after months or years of training; and that what will bother you are the clerks and not the records. Then if you are wise, you will try to understand the present records, systematize their keeping, hold the clerks up to their work, and keep their little fusses from the manager. It is the man who pours oil on the troubled waters who "gets there."

Are you an assistant foreman? If so, do you get along smoothly with the men, and make them do their work well and rapidly? If you see a piece of line wire drop on someone's lawn, do you let it lie to ruin someone's lawn mower, or do you carefully pick it up and prevent a complaint? Do you send in your pay roll and material records every Saturday night as asked, or do you regard clerical work as a quite unworthy detail of your line building? Be careful, painstaking and conscientious. Do your duty and lead a clean life and other men will respect you. Be courteous and considerate of their feelings, but let them understand that you are the boss.

About those big ideas—keep them, and give the company the use of them when you know—absolutely—that they will "prove in"—but now—Are you an assistant?

A Target Range Telephone Line

By M. C. Wilson

The local National Guard organization at Clay Center, Kansas, requested the Clay Center Telephone Co. to design and install at its rifle range a telephone system suited to its needs. Such a system would be used during target practice to communicate between the officer in charge of the firing squad and the officer in charge of the target pit, enabling the field officer to obtain the scores of each man without walking the length of the range, or reverting to wig-wag signaling. As the range is 1,000 yards in length it is the only practical means of communication from the field to the target is by telephone.

To be practical for such a purpose, a telephone system must be rugged and simple, as it would be handled by persons unfamiliar with careful handling of telephone apparatus. At the same time, the field telephone must be light and easily handled. To secure all of these conditions it was necessary to use a common battery outfit. By using dry batteries as a source of power, a system was devised which is said by the users to have fulfilled every requirement. For the talking sets, a pair of troubleman's hand telephones, such as are used on common battery systems, were obtained from a well known manufacturer of telephone apparatus. Each of these telephones consists of a transmitter

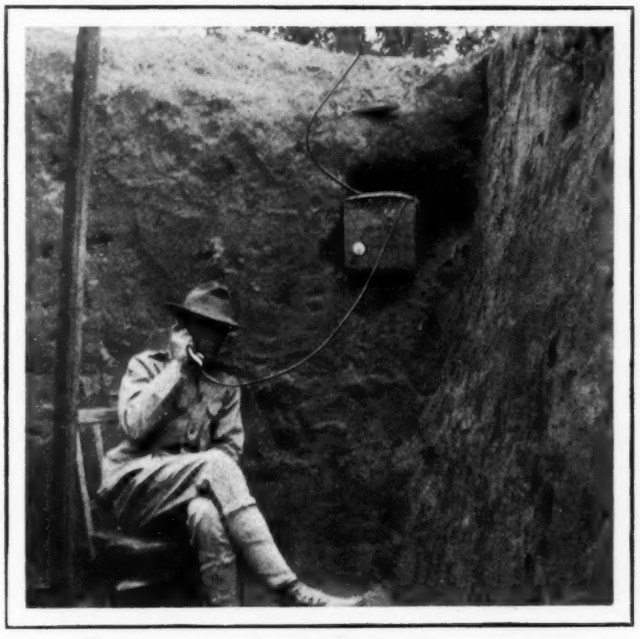


Fig. 1—Pit Telephone in Use.

and receiver in series, attached to a conveniently arranged handle. A push button in the handle holds the circuit normally open, but capable of being closed by pressure of the thumb when the set is in use. A piece of lamp cord 25 feet long was attached to one of the telephones in place of the regular cord furnished with it. This cord was then connected to a portable extension bell, which was made up of an ordinary 1,600 ohm ringer and a 2 m. f. condenser, wired in series. This extension bell and telephone were connected to the line by a short cord, terminating in snap clips. This was the set used in the field. The entire outfit weighed but little more than an officer's revolver and holster.

The line was strung so low as to be within easy reaching distance of a man on the ground, insulators being mounted on posts set at each 100 yard line as distance markers. About three inches under the top wire of the field terminal post, a large nail was driven on which the extension bell was hung by a hook provided for that purpose. By snapping the clips on the line the set was ready for use.

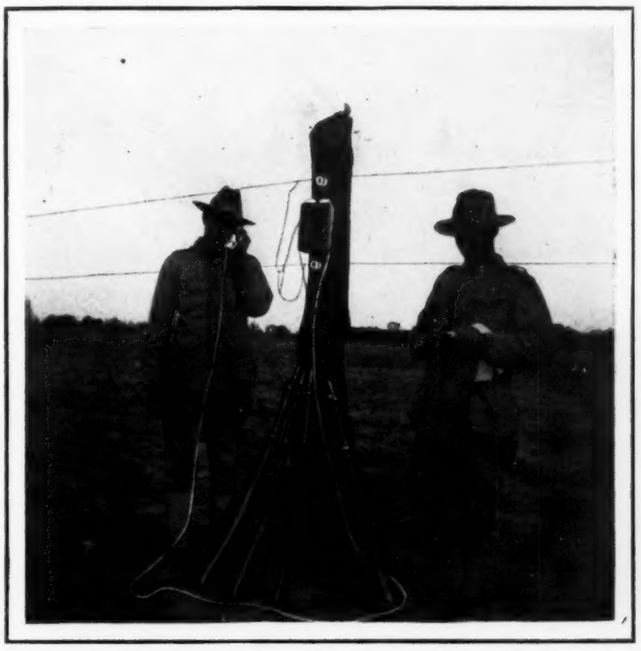


Fig. 2—Field Telephone Located at Firing Line.

At the pit end of the line was placed the necessary apparatus for operating the system. This was mounted in a box about 22 inches long, and just wide enough to hold four dry batteries in a row across it. In one end of this box were placed two sets of batteries, one of 16 cells to furnish talking current, and one of 4 cells to ring the bell when cut in circuit by the line relay. The remainder of the space was taken up by the hand generator, repeating coil, hook-switch, relay and bell. The circuit drawing shows very clearly the connection of the apparatus in the box. There is nothing special about any of the apparatus contained in the box, as the entire outfit with the exception of the relay and telephones, was taken from stock on hand.

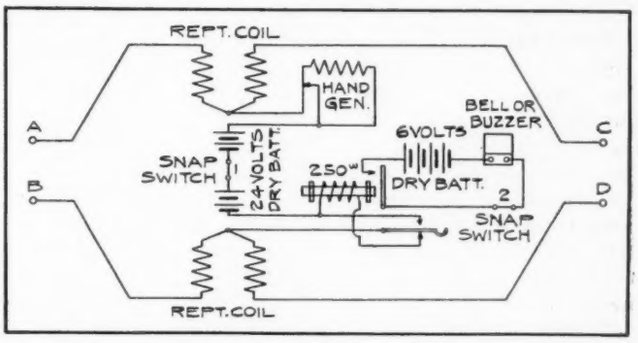


Fig. 3—Circuit Installed in Special Box to Provide for Talking and Signaling on Range Line.

The binding posts, *A*, *B*, *C*, and *D*, along with the snap switches 1 and 2, are conveniently located on the top of the box lid. The switches are both indicating and are used to

prevent any possibility of wasting current when the outfit is stored. The box complete, with all the apparatus, weighs about 60 pounds and is provided with rope handles by which it may be easily lifted and carried.

To use the system, the box is lowered into the pit and placed in an excavation in the wall, as is clearly shown by Fig. 1. Then the line is connected, by means of a piece of

Fig. 4—Receiving Reports of Shots Fired From 300-Yard Line.

duplex drop wire, to one pair of binding posts, and the pit telephones to the other pair. That completes the arrangement at the pit end of the line. By connecting the field telephone to the line, and pressing the push button, the bell in the box is rung, thus calling the telephone attendant at the pit. Fig. 2 shows the field telephone in use.

After target practice, the outfit is disconnected from the range line and stored until the next "shoot."

The cost of this system installed, with 800 yards of metallic line, was in the neighborhood of $42. This did not include the cost of poles or labor of setting them, as this was done by the militia organization.

The system, when put in service, justified every expectation of those who designed and used it and Captain Martin is very enthusiastic over the results obtained, justly thinking it gives him a very material advantage over many National Guard organizations, not so equipped, in turning out marksmen, as by its use the men are enabled to do about double the amount of shooting in a given time as is possible with the use of any other system of communication.

About State Regulation of Public Service Corporations.

Mr. Frederick W. Whitridge, of New York, receiver of the Third Avenue Railway Company, has had dealings with the New York Public Service Commission, and doesn't like the way that honorable and useful body does business. In fact, Mr. Whitridge, using a common expression, is "sore on" the whole idea and practice of regulation, as he has seen it work out. In an address on "Individualism," delivered at this year's dinner of the St. George Association, he relieved his feelings in the manner shown by the following abstract:

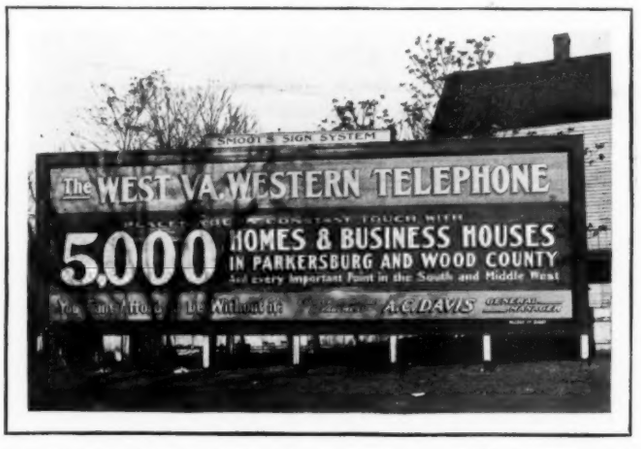
"I allude to this particular Commission only by way of illustrating the general dangers of these endeavors at governmental regulation. In the first place, its effect on the people themselves; even the newspapers are inclined to say, when some difficult question arises, "Oh, well, we have a Public Service Commission, so it is all right. In the second place, the effect on the Commission themselves is ravaging. Great power has always had a way of going to the heads of people who were intrusted with it, and forthwith they began to clamor for more from the same cup.

"A year ago this Commission made an order in respect to cars, and I have said to them: 'You seemed to think we were living in the time of the first book of Genesis, and that you had only to say, 'Let there be cars,' and then there were cars.' In another case one of their officials reported the condition of some of my cars to be horrid, as it was, for I had only had them a fortnight. The Commission having ordered their immediate improvement, I protested and asked for particulars, and then after a month the same official, absolutely confident in the efficacy of an improvement in consequence of that order, and among other things, said sixty per cent of the cars had new seat coverings. In fact, not a car had been touched. The operation of that man's mind was arrested by his faith in an order, and, in proportion as regulation is allowed to extinguish individualism, I contend that not only the officials, but the people, cease thinking and acting for themselves. It is a natural consequence, too, under our form of government, that those who have power should imagine that they were the special guardians and mouthpieces of the people, and that they were just doubly justified thereby in what they said and proposed, and I think I have detected a slight tendency to be peevish when we differ from them.

"To you here tonight and to every man who loves his country I say, if you want regulation, have it, but do not fool yourselves about it. It is quack medicine, a little of it may be useful, but for heaven's sake don't believe eevrything which is printed on the bottle. Remember it will not give you a tithe of what you expect from it, it will cost you millions, and it will enfeeble your minds and rob you as much as it can of your self-respect and your precious individuality."

West Virginia Telephone Company Experiments with Billboard Advertising.

Mr. A. C. Davis, general manager of the West Virginia Western Telephone Company, recently added a new experiment in advertising to the large number of very successful innovations he has made in this work. The illustration shows a large billboard which was erected at a



Illuminated Bill Board, Located at a Corner Where All Street Cars Pass.

prominent street corner where electric cars pass frequently laden with people traveling between Parkersburg and suburban points. The Independent telephone is thus brought prominently to the attention of a large number of persons every day and evening, as the sign is lighted.

Rate-Making for Public Utilities

At a joint meeting of the Wisconsin Electric & Interurban Railway Association, the Northwestern Electrical Association, and the Fox River Valley Gas & Electrical Association, held at Sheboygan, Wis., on April 12, Mr. Halford Erickson, member of the Wisconsin Railroad Commission, presented a valuable paper dealing with certain fundamental requirements of intelligent rate making. It is interesting to note that, although adapted especially to an audience composed of men engaged in the electric light and power business, by the changing of a few words, substituting "telephone service" for "electricity," "telephone plant" for "electric plant," etc., the treatment of the subject is, in general, closely applicable to the telephone business. Mr. Erickson said:

"The so-called public utility law of this state, has made it one of the duties of the railroad commission to prescribe uniform systems of accounting for the various public utilities which are included in the provisions of this law. Our commission has endeavored to comply with this requirement. To that end we have prepared classifications of accounts, together with blank forms for annual reports.

"In developing these classifications and forms we have earnestly endeavored to perfect systems of accounts that are not only sound from a theoretical point of view, but that also will fit in with or apply to the various conditions under which the different utilities are operating. To this end we have made as thorough a study of accounting principles as it was possible for us to make in the time allotted for this work. We have also examined a large number of accounting systems now in use in this and other states. We have held frequent conferences with representatives of the various utilities in this state for the purpose of obtaining their views and co-operation in this work. We have also carried on a voluminous correspondence with most of these utilities for the same purpose. The result is that the work we have performed represents views and thoughts that have been obtained from many sources and in a great variety of ways.

"Upon some of the utilities in this state, particularly the larger ones that can afford to, and that keep very complete and up-to-date records of both their financial and other transactions, our demands for information and suggestions have indeed been heavy.

"These demands have invariably been cheerfully met. Their managers, comptrollers and accountants have not only devoted a great deal of time to our work, but they have also opened their books and records for our inspection. This assistance has been of great value to us. I take the opportunity of expressing my personal appreciation, as well as that of the commission, for all the courtesies that in various ways have been extended to us by those who are operating public utilities in this state.

"Our efforts in connection with this work have been mainly directed toward the development of such classifications and statements of the gross earnings, operating expenses, net earnings, fixed charges, expenditures for construction, and the operating statistics generally of the various utilities as would seem to be demanded by existing conditions, and as it is thought would aid us and everybody concerned in obtaining a better understanding of the many intricate problems that are constantly arising in connection with the operation of these utilities.

"It is not my intention to here enter upon any detailed discussion of these classifications or work, either as a whole or in part. All I had thought of doing at this time is simply to point out a few facts which tend to show the importance of a detailed classification of the operating expenses and a correct and suitable system of accounting from the point of view of rate-making, and to understand the conditions under which the plants are operating. In order to do this it will be necessary for me to say something about the investments that are required in such plants and the relation which both the earnings and the expenses bear to these investments. In this connection it will also be necessary to call attention to the nature of the services or products that are required by such plants and to the rates that are charged by them for these services, as well as to certain other facts that are more or less closely related to the question under discussion.

SCIENCE OF RATE-MAKING IN A BACKWARD STATE.

"There are many reasons why I desire to emphasize rate-making at this particular time. Rate-making is one of the important features in the management of public utilities.

"One would think that a feature as important as this ought to be thoroughly understood, not only by those who make and collect such rates, but by those who pay them. But this is not always the case. In many instances there appears to be an almost woeful lack of sound information as to how a reasonable, just and equitable rate schedule should be built up. The result is that many of the rate schedules that are now in effect appear to be built up on mere guesses, without much if any reference to any other factor than expediency. They are often so constructed as to be inequitable to both the owners and the customers of a plant. All this has led to a situation that is far from what it should be. It is to a considerable extent responsible for the fact that the science of rate-making is in a more backward state and, generally speaking, less well understood than almost any other feature that pertains to the operation and management of such utilities.

"A rate schedule to be sound must to a considerable extent be based upon the cost to the plant of furnishing the services it covers. By this is not meant that this cost is the only element that enters into rate-making. There are many factors that must be considered in this connection, but none of these would seem to be of more or even of as much importance as the cost in question. As this cost depends upon the value of the plant or the amount of interest the owners are entitled to thereon, as well as on the operating expenses, depreciation and other items of this character, it is manifest that rate-making must be very closely connected with accounting and other operating records. In fact, this connection is so intimate that a correct method of rate-making is almost out of the question unless the financial and other records are properly kept. The former is dependent upon the latter. Some reference to what is involved in fixing rates would, therefore, not seem to be out of place here.

"It is not my purpose, however, to endeavor to outline in full any sound method of rate-making. All I desire to do, all I hope to be able to do, is simply to briefly discuss a few of the more important elements that should be considered in this connection; most of these elements, which are so essential in building up a rate schedule, can be obtained and made available only where all the records of the utilities are properly kept.

EXTENSIVE FIXED INVESTMENT REQUIRED.

"Public utility corporations are of such character that in order to be properly equipped for performing the services which they render to the public, they require an extensive

and costly fixed investment. An electric plant, for instance, must have large power house and other buildings, costly machinery of various kinds, miles of wire and pole lines, and a great deal of other equipment. All this costs money. In fact, the investment required is usually several times as great as the annual gross earnings. This is also in a measure true of many manufacturing plants, although since these may be kept more steadily in operation their annual sales usually constitute a considerable proportion of their investment. In commercial enterprises, on the other hand, the fixed investment is relatively small and their capital is usually turned over several times each year.

"While in some respects the products of public utilities may be regarded in the same light as other manufactured commodities, a little examination of their nature will show that this is not in every respect in accordance with the facts. Electricity, for instance, seems to differ from the ordinary manufactured articles in this, that it is more in the nature of a service than of a commodity. This is also true of transportation. While gas and water are in a sense commodities, the character of their delivery and use is such that even gas plants and pumping works are performing services for their customers rather than producing commodities for them. The fact that all of these utilities are producing something which is measured and sold at given prices per unit, very much like ordinary manufactured articles, would not seem to change the situation in this respect.

"Electricity also differs from ordinary manufactured goods in this, that it cannot be manufactured at a constant rate and stored and disposed of as the demand for it may dictate. For some productive undertakings, for instance, the situation is such that the time of production can be determined by their management. For other undertakings, again, the conditions are such that the time of production is determined by the parties who are served. In the case of many manufacturers it matters but little just when their plants are in operation as their products can be and usually are stored until wanted. In other cases, again, such as in electric plants, the service they furnish must be rendered when desired by their purchasers. For those who come in the former class the size of the plant can be adjusted to the total output. For those who come in the latter class the size of the plant is determined by the maximum instantaneous demand. For a given demand the plant must be as large when this demand continues only a short time per day as if it were constant throughout the entire 24 hours.

"A plant that must stand ready to furnish service the moment it is called upon to do so is also apt to have a relatively high cost for fuel power and for wages. In other words, the cost per unit of the services they render is apt to be relatively much greater than it would be if the demand was more constant. While electric plants furnish the best example of plants that come in the latter class, what is true of electric plants in this respect is also in the main true of gas plants and water works. While the latter have some advantages over electric plants in the way of storing their products, these advantages are by no means as great as in other manufacturing industries. Gas, because of its nature, can be kept only for a limited time. This is also true of water. Both must also be kept under constant pressure, which of itself is costly. The equipment of an electric railway in a city must be adequate to accommodate the heavy travel that often occurs mornings and evenings, although the equipment then required may be very much greater than the equipment that is needed during the rest of the day.

"The furnishing of electricity is a service that must be rendered simultaneously with the demand for it, and since electricity cannot be stored it is evident that the generating, distributing and measuring equipment of the plant must be ample for handling the maximum demand that may be made upon it, even if this demand does not last but a few minutes or hours each day.

"From these facts it is clear that the size or the capacity of an electric plant is determined by the instantaneous maximum demand that is made upon it by its customers. In other words, this demand fixes the investment that is necessary for the performance of the services in question. Since the period during which this demand continues each day is usually comparatively short, it also follows that the investment required for such plants when measured by their output or product is found to be relatively very high.

DETERIORATION AN EXPENSE.

"These facts relating to the nature of the services furnished by electric plants and to the relation between the investment and the output, are important because of the light they throw on the expenses that are involved. The plants are deteriorating with age. This is due partly to wear and tear and partly to natural decay and obsolescence. This deterioration is an expense. It must be met by the owners and is properly chargeable against the revenues. The same is true of a reasonable rate of interest on the amount invested. Both of these items depend very largely upon its size or capacity. That is, they are greater for larger than for smaller plants. Taxes and insurance are other items that come in the same class, and this is also the case for certain other expenses. The greater proportion, if not all of these expenses, is directly proportional to the investment. They increase with increases in the investment. As the investment in turn depends upon the maximum instantaneous demand, these expenses are also more or less closely dependent upon this demand. This is as true for each user of current as for the plant as a whole.

"The items of expense which have thus been explained are usually classed under the head of fixed expenses and constitute that part of the total cost which as a rule is not affected by the output or by the extent to which the plant may be used. They are as large when the output is at a minimum or even when there is little or no output as when it stands at the maximum. What has been said concerning them clearly inidcates that they are as great for a consumer connected with the plant who is using little or no current, but whom the plant must hold itself in readiness to serve, as for a consumer with a like installation who is using a great deal of current. The former has the capacity to demand current at any time to the full extent of his installation. This the plant must be ready to furnish. In other words, the capacity of the plant must be great enough to meet this demand when called for.

"The expenses thus spoken of are as stated directly dependent upon the investment that is required for the consumers, and that must be made in order that they may be served. But they constitute only a part of the cost of operation. The plant must be kept running in order to produce and deliver current whenever it is called upon to so deliver it. In other words, the plant to render the service required must not only be a completed plant but it must be kept in constant operation. To keep it in operation, however, entails further outlays. No electric plant can be kept running or be made to produce anything except at considerable expenditure for fuel or power, water, waste, oil, lamp renewals, and for such repairs, renewals, labor, supervision and other items as are required for the operation of the plant and depend upon the same. These items are called the running or variable expenses and they depend upon the output. They increase as the output increases and practically in the same proportion.

DETAILS OF FIXED AND VARIABLE EXPENSES NECESSARY.

"In order to be able to make rates that are just and equitable, and to obtain a safe basis for the greatest possible exten-

sion of business of the plant, it is absolutely necessary to have on hand full data showing the details and the totals of both the fixed and of the variable expenses of a plant. Such knowledge, it seems to me, is essential both to the rate-makers and the managers. Without it much of the work of both must, to a large extent, be based upon estimates rather than upon actual facts.

"While detailed information with respect to both the fixed and variable expenses of a plant is almost indispensable, such information is not easily obtained. The reason of this is found in the nature of these expenses. Some items, for instance, are such that they come directly in either one class or the other, and can be easily picked out. Other items again are such that while they come wholly within one or the other of the two classes, they are usually so mixed up with each other that they cannot be separated except by careful classification and recording at the time they are incurred. There are still other expense items which do not come wholly within either class and which, therefore, will have to be apportioned between these two classes on some arbitrary basis, which arbitrary basis in turn will largely depend on the relation which the balance of the two classes of expenses bear to each other. In fact, most of the expense items are so inter-related that they cannot be exactly separated between the fixed and variable classes except by a careful classification and analysis upon the original records. This may apply to such items as interest, depreciation, etc., as well as to many other items.

"Since a classification of expenses which has thus been found to be necessary is combined with so many obstacles and difficulties, the question naturally arises: How can the separation be best and most economically made? The answer to such a question has already been suggested. It is, that such separation cannot often be accurately made except when the accounts and records are properly kept and adjusted to conditions under which the plants are operated. While the accounting systems which we have prepared should not be classed with cost accounting, they have been prepared with a view of so classifying the various expense items that in most instances under them the work of separation may become easier than now is the case, and that safe bases may be found upon which to apportion the common items.

"It is true that our classifications do not go as far in this respect as might be desirable. At the same time they go as far in this direction as it was possible to make them go without coming in too serious conflicts with present practices of accounting that are regarded as sound from other points of view. In fact, the necessity for a more accurate separation of the fixed and variable expenses than is possible under many of the present methods of accounting constitutes one of the strongest arguments for improvements in accounting methods in so far as public utilities are concerned.

COST OF THE PLANT.

"What has been thus said with respect to correct classifications and records of the operating expenses proper would also seem to apply with equal force to the cost of construction and extensions as well as to the operating statistics in general.

"The cost of the plant should be known, because of the important part it plays in fixing the value of the plants for rate-making purposes, or in fixing the value upon which the owners are entitled to reasonable returns. Operating statistics generally, which are too numerous to specify here, are also necessary, not only to those who are making the rates, but to those who are managing the plant. In fact, they are almost indispensable to both of these functions.

"The subject of rates and rate-making is one that is very close to us. In one form or another it is involved in most of the cases that come before the commission. While we are doing all we can in solving this problem we find it an exceedingly difficult one to deal with. While many of the principles and facts that should be considered in rate-making are now fairly well understood the bottom has not been reached. I am quite certain that those among us are few who do not have a great deal to learn before we can say that this subject has been fully mastered. To make a rate schedule that under all conditions is equitable to each of the various classes of customers; that yields a reasonable return on the investment, or that is fair and just to all concerned; and that will also assist in promoting or extend ing the use of the current, is, indeed, a difficult task. It is a task that is worthy of the best efforts not only of those who are actually operating such plants, but of commissions such as ours. It is a problem in the solution of which we need your earnest and frank co-operation.

RECORDS SHOULD BE FULL.

"Besides those given there are numerous other reasons why the financial, and even other records, should be as complete and as detailed as possible. One of these is that without such records it is almost impossible to obtain a correct statement of the net earnings of a plant. Correct statements of the net earnings are necessary in order to understand both the financial and the rate situation of any given company. This is self-evident. Yet the accounts of so many companies are so incomplete that they often do not contain nearly all the elements that must be taken into consideration in preparing an accurate statement of the net earnings. In many cases no account at all is taken of depreciation. In other cases again depreciation is inadequately stated. Many other items are also over or understated. The cost of ordinary repairs, or maintenance, for instance, is sometimes charged to construction, while in other cases maintenance expenses include items for new additions which belong either in the construction or in some other account. The result is that the accounts of such companies are often misleading, and point to conclusions that are entirely at variance with the actual situation.

"When the operating expenses fail to include all items that should be included therein, the net earnings become overstated and show a false prosperity of the plant. When the operating expenses include more than there should be included in them the net earnings become understated and indicate that the plant is not as prosperous as it actually is. The situation in both cases is apt to be injurious to the plant. In the former case it may lead to rate and other complaints that are not warranted by the conditions, and which would not have arisen if the actual situation had been known. Under the latter showing the plant in the long run is apt to be injured in other ways."

William H. Crumb to Investigate Properties in Louisville.

Reports from Louisville, Ky., dated last week announce the appointment of Mr. W. H. Crumb, telephone engineer, Chicago, Ill., to examine the physical properties of the Cumberland Telephone Company for the government of that city. It is said that another expert will be appointed to examine the books and records of the company.

The ordinances providing for these examinations were passed by an almost unanimous vote on the recommendation of the Mayor. It is understood that the purpose of these examinations is to secure data for the City Attorney, to be used in connection with the suit now pending in the Federal Court, in which the City of Louisville seeks to enforce against the Cumberland company an ordinance for lower rates than those now charged to local subscribers. Mr. Crumb is well known in this line of work on account of his participation in investigations of telephone conditions for the cities of Chicago and Indianapolis.

The Production of Small Variable Frequency Alternating Currents Suitable for Telephonic and Other Measurements.*

By B. S. Cohen.

The ordinary telephonic current is a few milliamperes at a potential of about 2 to 10 volts and is of complex wave form. The frequency of the fundamental harmonic generally lies between 100 and 300 complete periods per second, the highest harmonic having a frequency of 4,000 ~ to 5,000 ~, although all harmonics above 1,500 ~ are comparatively unimportant. The average frequency of the whole wave is about 800 ~. From consideration of these data it follows that the ideal device for supplying such alternating current is one which will give currents of any frequency lying between 100 ~ to 500 ~, singly or in combination. The output of this apparatus should be about 1 watt, and it is necessary that it should be capable of working uniformly over a fairly considerable period of time. Simplicity and portability are also highly desirable. The vibrating wire interrupter described by Wien, Orlich, Campbell, and others, has when suitably modified given very satisfactory results. It has been found very difficult to construct a vibrating wire which will run reliably at a frequency much above 300 ~, the output is also very limited, and the frequency difficult to determine and vary. In order to overcome these drawbacks a special form of instrument has been designed. The wire is steel, 1.06 mm. in diameter, and supports a soft iron armature which is maintained in vibration by an electromagnet with a laminated core of stalloy, a mercury cup and a platinum wire contact. The wire is provided with a tension adjuster, and will run steadily at frequencies varying from 100 ~ to 250 ~. The frequency of the alternating output is quite independent of the wire frequency, and is obtained by means of a separate circuit, mercury cup, and contact. Several forms of oscillating circuit have been used of which the two principal ones may be described as "single action" and "double action" respectively. By joining up the two secondaries in a "double action" circuit, so that the waves either assist or oppose each other, some interesting results are obtained. With the break oscillations assisting one another, the make oscillations oppose each other and are therefore wiped out, the result being to give a wave exactly similar to that obtained with the single action circuit, but with about double the amplitude. When the secondaries are joined up so that the break oscillations oppose each other, whilst the make oscillations assist, the result, if these oscillations are equal in frequency but unequal in amplitude, is to give a continuous and more or less uniform wave. The regularity of the continuous wave can be best modified by slightly varying one of the inductances, which have air cores by inserting in the cores one or two strands of fine iron wire. It is obvious since the output depends on the difference between the two circuits

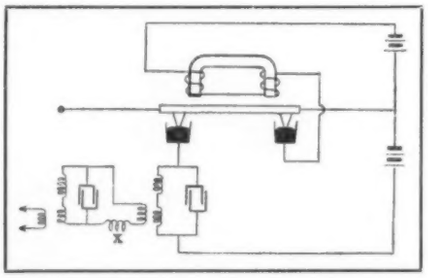


Fig. 1. Continuous Oscillation Circuit.

that it will not be large. To increase the output, different inductances for each of the two circuits can be used, and the capacities adjusted so as to get the same frequency in each circuit. It is of course impossible to obtain a pure sine wave by this method, and the extent of the impurity has not yet been examined analytically.

It is worth noticing that a number of double action circuits can be operated by means of a single mercury-cup and contact and any number of oscillating circuits can be joined in series. The oscillations which ensue on break are quite independent,

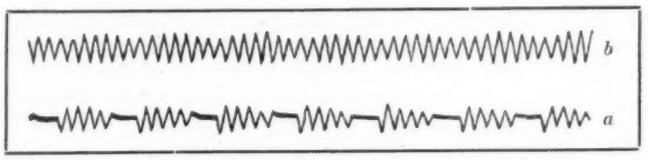


Fig. 2. Wave Forms for Continuous Oscillation Circuit.

each having the frequency of its particular circuit. The make oscillations will depend on the total capacity and inductance of all the circuit. The secondaries of the transformers can be joined up in series or in parallel to suit the external circuit conditions, and can also be joined to oppose or assist each other. By this means complex waves of definite formation can be built up. A modified form of double action circuit which has been found to give a greater output is obtained by replacing the two transformers by a single one put in such a position that both oscillations pass through it. Examples are given of continuous waves of 1,020 ~ and 3,700 ~ produced by this method.

If the oscillations produced by one circuit are superimposed on a second similar circuit, as in Fig. 1, a continuous oscillation results. Fig. 2 shows the resulting wave forms when each of the two circuits is tuned to 830 ~; (*a*) being the applied oscillation, and (*b*) the resultant. The *modus operandi* appears to be as follows: The damped oscillation applied to the second circuit causes resonance in the latter, and the oscillation set up will be in the reverse direction of the original oscillation inasmuch as it will tend to rise to a maximum whilst the latter is falling. By suitable adjustment of a series resistance, or an inductance, therefore, it is possible to obtain in the second transformer a wave which is the resultant of two equal and opposite trains of waves. This resultant wave is practically continuous.

Mercury Contact Effect.—In connection with a vibrating point contact in a mercury cup, a series of sparkless points occur at regular intervals as the distance between the contact and the mercury is varied. The author cannot find any previous reference to this phenomenon. It is probable that the action is partly mechanical, as at the sparkless points the vibrating surface of the mercury seems to be set in a rigid condition.

Use of Continuous Waves for Absolute Measurements.—The waves produced by the various arrangements described appear to be accurate enough for use when making absolute, as opposed to merely comparative, measurements. Tests, of which particulars are given in the paper, show that the amount of the departure from the sine shape in these continuous waves is comparatively inconsiderable.

Telephonic Measurements.—The special form of vibrating wire described was primarily designed for telephonic measurements of attenuation; and the author concludes with a brief outline of such tests. It has been found that by replacing the human voice and transmitter by the vibrating wire, and by using the correct frequencies, similar results to those produced by the voice can be obtained. It was suggested by my assistant, Mr. A. J. Aldridge, that direct measurements of the comparative volumes of sound issuing from the telephone receiver could be made by allowing the receiver to sound into a transmitter connected up in the usual manner to a battery and induction coil, and to measure the current in the secondary of the induction coil. This method has been found to solve most of the difficulties, and with the vibrating wire at the sending end of the line and at the other end of the line a receiver sounding into a transmitter, the latter being connected to a

*Abstract of a paper read before the London Physical Society.

barretter used as an alternating current milliammetèr, it has been found possible to carry out comparative telephonic measurements with greater accuracy than with the voice and ear,

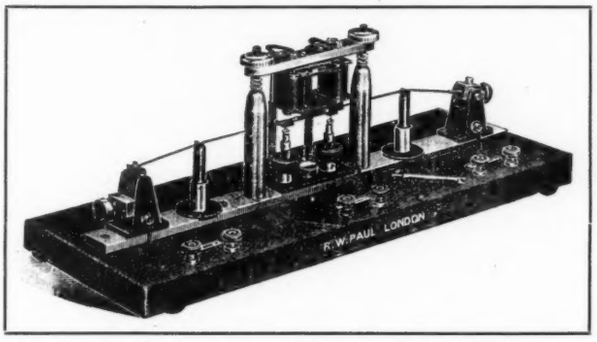


Fig. 1. Cohen's Interrupter for Producing Small High Frequency Alternating Currents.

owing to the elimination of the personal equation and the greater sensibility to volume variation of the apparatus used.

Apparatus for Alternating Current Measurements.

A vibrating wire interrupter forms a convenient method of producing small alternating currents for measurement purposes. There are, however, a number of drawbacks to the ordinary type of this apparatus. It is difficult to construct an interrupter of the ordinary type to run at a frequency above 500 ~, the

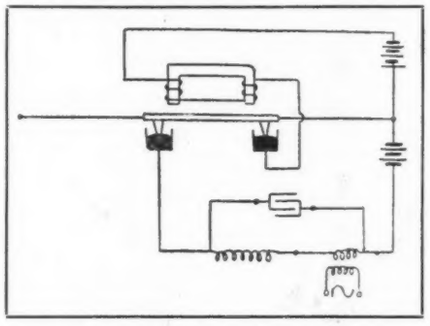


Fig. 2. "Single Action" Circuit.

output is limited and the frequency difficult to determine and vary.

A novel form of vibrating wire has been designed by Mr. B. S. Cohen in which these objections are overcome. Fig. 1 shows this apparatus, which is constructed by Mr. Robert W. Paul, of New Southgate, London, N. A laminated magnet acting on an iron armature maintains a stout steel wire in vibration. The circuit is made by a platinum wire contact and adjustable mercury cup. The broken alternating current output is quite independent of the driving circuit, and is produced by an oscillating circuit containing battery, condenser, inductance and transformer, and operated by a separate mercury

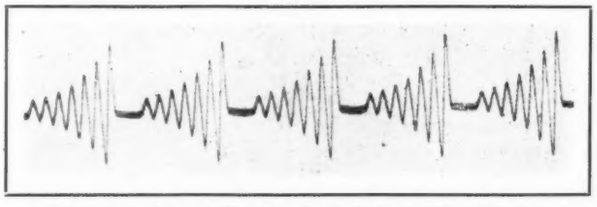


Fig. 3. Damped Oscillations from "Single Action" Circuit.

cup and contact. The alternating current produced in this circuit can be varied in frequency between large limits by varying the capacity. An output of 3 watts at frequencies up to 3,000 ~ can be thus readily obtained.

By reason of some action, which has so far not been explained, the full output can be obtained without any appreciable sparking at the mercury cup, although quite a considerable current may be interrupted. The mercury cups consist of small glass tubes cemented into brass sockets, to which connection

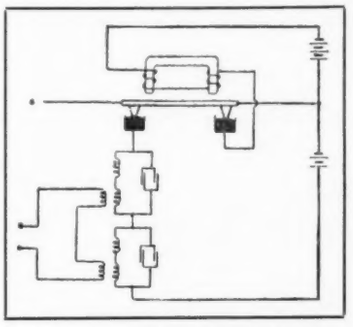


Fig. 4. "Double Action" Circuit.

is made, and the sockets are held by adjustable carriers from which they can readily be removed for cleaning purposes. The instrument is designed to take 30 volts for driving purposes. The output can be varied by varying the voltage of the oscillating battery, which for ordinary measurements is about 4 volts.

Two circuits, which may be respectively designated "single action" and "double action," can be used with this apparatus. The circuits are shown in Figs. 2 and 4. The right hand mercury cup in both cases is the driving cup which maintains the wire in vibration. The left hand cup interrupts the oscillating circuit. In the single action circuit (Fig. 2), at each break between the left hand cup and its contact a damped oscillation is set up. Fig. 3 shows a train of oscillations of over 1,000 ~ produced in this manner. The frequency of the oscillations is

$$\frac{1}{2\pi}\sqrt{\frac{1}{LK}}$$

The double action circuit shown in Fig. 4 consists of two oscillating circuits as shown in Fig. 2, and if the two circuits differ slightly from each other, and the transformer secondaries are joined to oppose each other, the result is to produce a continuous and fairly uniform wave. Fig. 5 shows a 1,020~ wave so produced.

Both these types of wave form are useful for alternating current measurements. They have proved particularly useful to the designer of the apparatus in connection with telephonic measurements. By using a special mercury cup, which can be easily fitted, in place of the ordinary cup an interrupted current up to 50 watts can be carried, and the instrument is then very useful for measurements with Campbell's vibration galvanometer.

Further particulars of the apparatus are contained in the paper read by Mr. Cohen before the London Physical Society, an abstract of which is given on the preceding page.

For measurement purposes Mr. Paul supplies the pattern of vibration galvanometer due to Mr. A Campbell of the National Physical Laboratory, and he has also brought out an alternating current galvanometer, consisting of a sensitive moving-coil

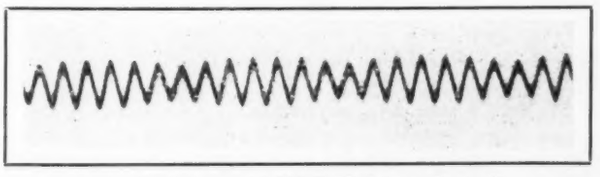


Fig. 5. Wave of 1,020 Periods per Second.

pointer galvanometer, combined with a barretter circuit of the form devised by Mr. Cohen and previously described in our columns. The sensitivity for alternating currents is high, a deflection of about 5 divisions being given with 1.5 microamperes at any frequency up to at least 5,000~.

Independent Company at San Antonio Installls Branch Exchange in Big Hotel.

The San Antonio Telephone Company, San Antonio, Texas, has just been awarded the contract for the installation of a telephone system in the St. Anthony Hotel, one of the largest hotels of the city. This contract calls for a private branch exchange switchboard and booths in the lobby, and the immediate installation of telephones in each

Big Hotel at San Antonio, Texas, Using Independent Service Exclusively.

of the 240 rooms of the hotel. Two hundred more will be necessary just as soon as the new addition which is being built to the hotel is completed. This instance only goes to show the favor in which the Independent telephone company is held in the city.

The San Antonio Telephone Company began business in 1901, at which time the competing company had about 1,000 telephones in service, and the San Antonio company began operations with 1,200 telephones, since which time its business has increased rapidly and steadily until at the present 5,000 subscribers are listed in the directory. The company installed its system throughout the Menger Hotel, and in 1908 installed numerous private switchboards in wholesale and large retail stores.

Mr. D. A. Walker, a pioneer in the Independent telephone business, and who has been connected with several large operating companies, is the manager of the San Antonio Telephone company. Mr. Walker is also president of the Texas Independent Telephone Association. Under Mr. Walker's management the company has given its subscribers the very best of service, both in its local district and over its long distance connections.

Mackay Denies Rumors of Big Merger of Telephone and Telegraph Systems.

For some time past newspapers have been printing reports of rumors alleged to have originated in financial circles dealing with a plan to combine the Postal and Western Union telegraph companies with the Bell telephone companies, to make a single gigantic corporation to furnish communication service. C. H. Mackay, of the Mackay Companies, the largest holder of American Telephone & Telegraph stock, was interviewed recently on the subject of a merger of the Western Union and American Tel. & Tel. companies, and stated that he thought there was nothing in the rumors, and that such absorption never would be carried out.

Telephone Saves Hunters.

A party of men, who had gone out on a turkey hunt near Searcy, Texas, made quite a new use of the telephone, says *Southwestern Telephone News.* They were treed by a pack of black wolves, and W. A. Cook, an official of the Independent Telephone Company, who had a transmitter and receiver with him, such as linemen use, tapped a telephone wire which passed through the tree in which he was treed. An urgent call for ammunition was sent in to the exchange. The people there sent out a well armed party, and the turkey hunters were found at the spot described from the tree-tops, a large pack of black wolves holding them captive. The wolves were driven off, some of them being killed, and the turkey hunters were rescued with the comment that it was lucky for them that the wires ran through the trees in which they took refuge.

A Novel German Loud Speaking Mine Telephone.

By Frank C. Perkins.

The accompanying illustration, Fig. 2, shows the exterior of a water-tight telephone station designed for marine and mining service, and constructed at Berlin at the telephone

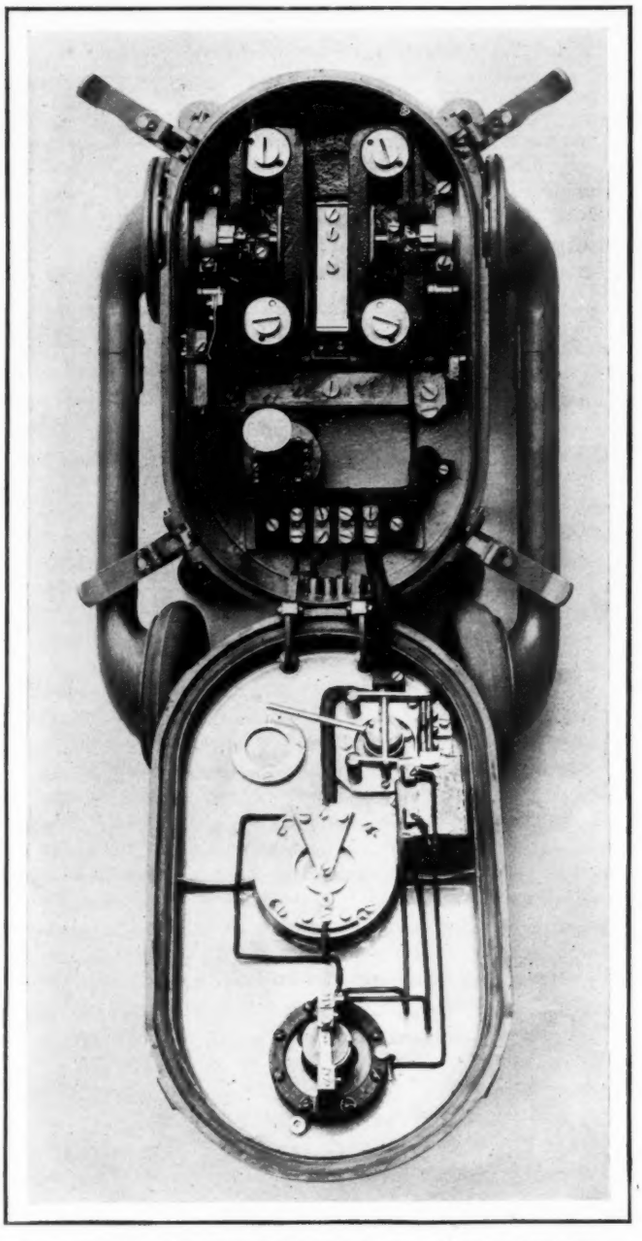


Fig. 1. Interior of a New European Type of Mine Telephone.

and telegraph works of C. Lorenz Aktiengesellschaft. This loud-speaking marine and mine telephone equipment consists of a water-tight casing of bronze casting, tested to a pressure of 7 metres of water when closed and sealed by

the rubber gasket which is shown in Fig. 1, with the telephone equipment.

Each station is provided with two swinging ear tubes, the receivers being located just inside bronze casing.

The transmitter is mounted on the inside of the cover of the bronze casting, together with the switch mechanism

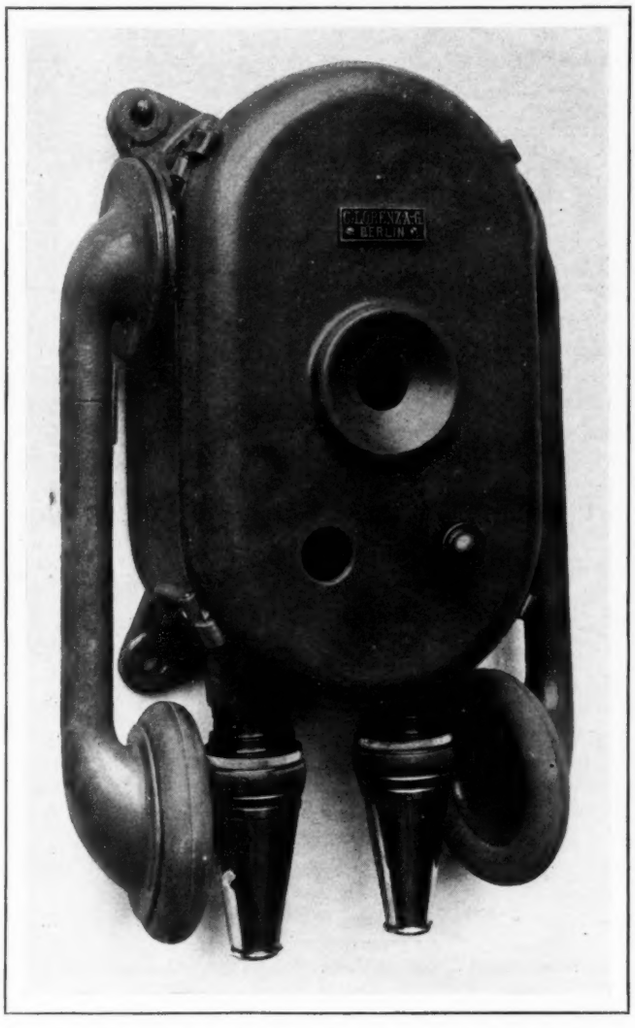


Fig. 2. Mine Telephone as It Looks in Service.

indicated in Fig. 1. It is stated that this loud speaking telephone equipment of German design and construction has been extensively employed on many of the largest steamship lines, and is used to great advantage not only for mining service but also in chemical works and other plants where the telephone apparatus is liable to be damaged by smoke, gases or other detrimental atmospheric conditions.

Interference of Single-Phase Railway Current.

The new Chicago, Lake Shore & South Bend Interurban Railway, between Chicago and South Bend, Ind., is a single-phase road 77½ miles long, with operating potential on the trolley wire of 6,600 volts. Passing around the southern end of Lake Michigan it parallels for a long distance the Lake Shore steam railroad and the wires of the Western Union and Postal telegraph companies. The steam railroad and the telegraph companies allege that their telegraph and telephone service has been seriously intefered with by induction from the high-potential, single-phase trolley wires of the railway company. They seek to enjoin the Interurban people from operating their cars on the ground that the high voltage has demoralized by induction their methods of electrical communication. The *Electrical World* reports that the judge who was asked to issue the injunction refused to do so, holding that no company has a monopoly of the air. The telegraph companies and the steam-railroad company have now taken an appeal to the Supreme Court of Indiana, so that the matter remains undecided. The Lake Shore steam railroad uses the telephone to a considerable extent to supplement the telegraph in transmitting train orders, and it declares that the operation of the 6,600-volt overhead-trolley circuit by single-phase, alternating current is a serious hindrance in the use of both its telephone and telegraph wires.

New York Independent Loses Franchise Case.

On July 13 the Appellate Division of the New York Supreme Court denied the appeal of the New York Independent Telephone Company for permission to place telephone wires under the streets of the city, affirming the decision of the special term of the Supreme Court.

The company claimed its right to lay wires under the franchise of a concern organized to conduct a burglar alarm system.

Advertising the Home Telephone.

The advertisement here reproduced is one of a series which has been attracting a great deal of attention in Saginaw, Mich. The Valley Home Telephone Company within the past year has provided a rebuilt plant capable of rendering the highest grade of service, is going out for the business, and is getting it.

TELEPHONE TALK NO. 4

DURING THE PAST FEW YEARS, VARIOUS CITIES HAVE ADOPTED "MOTTOES" OR "SLOGANS," MOSTLY FOR ADVERTISING PURPOSES.

THESE "SLOGANS" ARE SUPPOSED TO INDICATE SOME **PARTICULAR** ADVANTAGE PERTAINING TO THE CITIES ADOPTING THEM, BUT MORE OFTEN MEAN NOTHING AND SOMETIMES SEEM ABSURD

SAGINAW'S SLOGAN—**"THE CITY OF OPPORTUNITY"**—IS **PECULIARLY APPROPRIATE** TO THE CITY, AS **"OPPORTUNITY"** ACCORDING TO WEBSTER MEANS **"A SUITABLE COMBINATION OF CONDITIONS."**

PROBABLY THE MORE **GENERALLY ACCEPTED MEANING** OF THE TERM—**"THE CITY OF OPPORTUNITY"**—IS TO MAKE SAGINAW THE GREATEST CITY ON THE MAP **"PATRONIZE HOME INDUSTRIES," "BUY SAGINAW-MADE GOODS," "BUILD UP SAGINAW ENTERPRISES,"** ETC.

SAGINAW WANTS **MORE** INDUSTRIES, THAT WILL EMPLOY **MORE PEOPLE**, THAT WILL BRING **MORE** MONEY THAT WILL BE **SPENT HERE.**

BUILDING UP AND DEVELOPING THE INDUSTRIES **ALREADY ESTABLISHED** DOES THE **SAME THING.**

NEW INDUSTRIES REQUIRE NEW CAPITAL.

THE BUILDING UP OF THOSE **ALREADY ESTABLISHED** CAN SOMETIMES BE DONE BY **SIMPLY GIVING THEM YOUR PATRONAGE.**

THE OBTAINING OF ONE'S REQUIREMENTS **AT HOME, AT AN EQUAL OR BETTER PRICE**, KEEPS THE MONEY **AT HOME** AND IS CERTAINLY BETTER THAN SENDING THE MONEY AWAY TO **BENEFIT** OTHER COMMUNITIES.

THIS BEING TRUE, IT APPLIES TO **TELEPHONE SERVICE**, WHICH IS TODAY ONE OF THE **MOST NECESSARY REQUIREMENTS** IN BOTH BUSINESS AND SOCIAL LIFE.

OPPORTUNITY HAS **ANOTHER** MEANING—**"A FIT OR CONVENIENT TIME"**—APPLY THIS LAST DEFINITION TO **YOUR** TELEPHONE REQUIREMENTS:

BECAUSE, THE HOME PRODUCT, **VALLEY HOME TELEPHONE SERVICE," HAS NO SUPERIOR** IN THIS OR ANY OTHER STATE.

BECAUSE THE **PROFITS** OF THE **VALLEY HOME COMPANY** FOR THE PAST TEN YEARS **HAVE BEEN** AND IN THE FUTURE **WILL BE**, THROUGH DIVIDENDS TO STOCKHOLDERS, RETURNED TO LOCAL CHANNELS OF TRADE AND FIND ITS WAY INTO THE **BUILDING UP OF OTHER INDUSTRIES.**

BECAUSE, THE CHARGE FOR THE HOME PRODUCT, **"VALLEY HOME SERVICE,"** IS LESS THAN THAT CHARGED FOR **THE FOREIGN PRODUCT.**

BECAUSE, ITS **RATES** ARE **REGULATED** AND **CONTROLLED** FOR THE NEXT **28** YEARS BY A **FRANCHISE** GRANTED BY THE COMMON COUNCIL OF THIS CITY.

BECAUSE, THOSE WHO SUPPLY THE HOME PRODUCT, **"VALLEY HOME SERVICE,"** ARE YOUR **NEIGHBORS, FRIENDS** AND **BUSINESS ASSOCIATES**, AND **THEIR** AND **YOUR INTERESTS** IN THE CITY AND ITS ENTERPRISES **SHOULD BE MUTUAL.**

THE ABOVE BEING TRUE, **EVERY CITIZEN WHO USES** OR **CONTEMPLATES USING** TELEPHONE SERVICE SHOULD DO **HIS** PART TOWARD **"MAKING A GREATER SAGINAW"** BY **USING THE HOME PRODUCT.**

THE "FIT AND CONVENIENT TIME TO DO THIS IS NOW.

THE VALLEY HOME TELEPHONE COMPANY IS IN A POSITION TO SUPPLY **YOU** WITH SERVICE UPON EXTREMELY SHORT NOTICE, AS **WHEN** ENLARGING AND IMPROVING THEIR PLANT, **IT PREPARED FOR 4,000 TELEPHONES IN SAGINAW.** SWITCHBOARD CAPACITY WAS INSTALLED FOR **THIS NUMBER** AND CABLE PAIRS WERE TERMINATED AT CONVENIENT POINTS TO REACH **EVERY TELEPHONE SUBSCRIBER IN THE CITY.**

VALLEY HOME TELEPHONE CO.

One of a Series of Advertisements Published in Local Newspapers.

Letters on Practical Subjects

A Lightning Prank.

South of this place we have two copper circuits, one of which is cut into an office about ten miles out, while the other is cut into an office twenty miles away. These lines are transposed for a phantom circuit, using what is locally known as the square transposition. That is, each pair is dead ended from either direction and "jumpered" across with best quality rubber and cotton covered No. 12 copper wire. While making our regular morning test some time since we found that one line tested open from this office, and showed "short" on a test made toward us from the next station south, with the two lines crossed. The line was patroled and the lineman reported the wires all up and clear, but on a second trip he found, at one place where the lines were transposed, that the jumper wire was open from this way, and from the other direction the two wires were fused together and along with them was one wire of the other pair.

This was done by lightning, but neither the pole, the arm nor the bare wires were injured at all. The three wires fused together were cut out and brought in to me as proof of the occurence.

Mt. Pleasant, Mich. C. L. Patee.

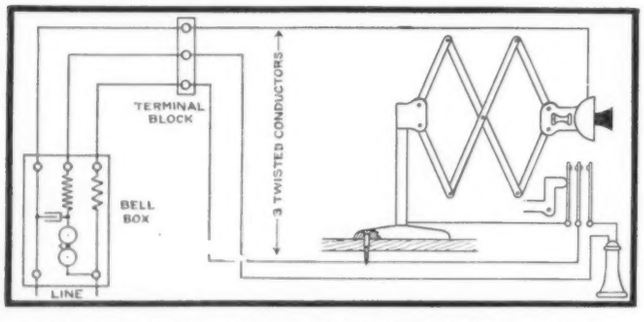
Trouble in Desk Wiring.

A short while ago we had a recurring trouble which tested like "receiver off," and in fact persons in the office where the telephone was located could be heard talking and passing about the office. Of course, it was very annoying that no one would replace a receiver when we could hear them so plainly, and throw the "howler" on the line without seeming to attract their attention.

Finally, the subscriber, wishing to make a call, met us on the line, and was instructed to replace the receiver, because they were tying up the line to possible incoming calls; we were very promptly informed that the receiver had been on the hook all along.

Forthwith, we dispatched a troubleman to the station to ascertain the trouble; after a careful test, no trouble was found, the line being perfectly clear.

This happened several days in succession, and finally, the troubleman was instructed to make a more thorough

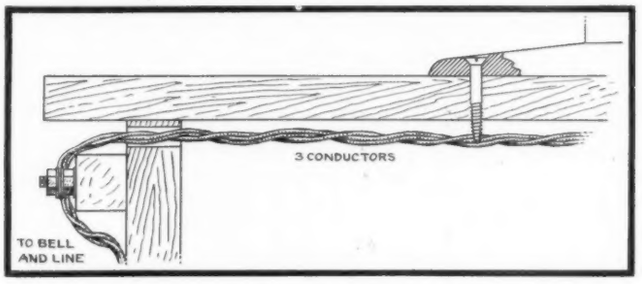


Defective Circuits Which Enabled Central Office to Hear Conversation on Subscriber's Premises.

and searching investigation and told if he could not locate the trouble to change the entire equipment and wiring.

Making a very careful test, it was found that the stand supporting the adjustable arm, which was in metallic connection with a transmitter having its shell connected to the hook contact, with screws, one of which was long enough to pass entirely through the top and into the three conductor twisted wire under it, thereby crossing the stand with one of the conductors; this contact being of the intermittent variety. Replacing the screw with a shorter one cleared the trouble. The subscriber was pleased and the troubleman was a wiser man.

The accompanying sketches show very clearly the manner in which the wiring came in contact with the screw. By tracing the circuit one can understand why we could hear those in the office, while they could not hear the howler; the receiver circuit being open at the hook.



Location of Screw Which Caused the Phantom Voices.

Two Lines Crossed Through Fire Alarm.

Two private lines were crossed, and very noisy. These lines came into different exchanges, one into Main and the other to a sub-exchange. The troubleman was at a loss where to look, and after changing the cable conductors on both lines without helping matters, in the end gave up his job.

I happened to be in town with a maintenance crew, and the manager asked me to look over the lines one Sunday

I drove to the end of one line, and climbed every pole for a mile looking for a foreign line, as the poles carried a firm alarm system. I found it. One line was crossed with the fire alarm wire and the other line wire was swinging into contact with the fire alarm conductor. By pulling a bit of slack the trouble was easily cleared and a little talk put the old troubleman back to work.

Wenatchee, Wash. Jas. C. Wilson,

A Feature of the Problem of Physical Connection.

Each succeeding year brings forth its regular crop of proposed legislative acts to compel the various telephone companies to join hands, so to speak; in other words, directing all such companies, under penalty, to place their plants at the disposal of all other companies.

With all due respect to the legislative representatives of the people, it is a consistent and well founded statement to say that the framers of such bills have been misguided, either by their own ambitions for notoriety, or by zeal for pleasing their uninformed constituents. They fail to realize the magnitude of such a measure as they advocate. They overlook its far-reaching effect. They therefore make no study of the telephone problem at large in detail. Having seen the rural lines extended from house to house along the highways, and terminated on a small switchboard at the village store, they form an erroneous idea of what comprises a telephone exchange or system. To them such a telephone plant has no limitations. They do not realize that it is suitable only for the one purpose for which it is used. They give no consideration whatever to details as to who shall bear the expense of remodeling such a plant in order that it might be possible to make it a part of an intercommunicative system. None of the bills thus far considered have intimated that there are many different classes of exchanges. They apparently all look alike to the authors of laws.

Let us consider certain extremes of the conditions which would result from the enactment of the usual proposed legislation.

In a certain small town there exists a telephone exchange, which, for the display of original genius is a wonder to behold. It originated in the mind of a small boy, who, by some unknown means, secured possession of some dry cells and learned something of their functions. For many years all of his spending money, as well as that of his chum, was invested in wire, porcelain knobs, nails, screws, telephones, etc. In time they had a system connecting the two houses, with stations in the auxiliary buildings. Later a line was built, by utilizing trees, roofs, clothespoles and what-not, to the parents' places of business. Gradually the system was extended to other places, and a small rental charged for service. The two boys devoted their entire time to the work. Being studious and of mechanical inclinations they bought books, and secured therefrom certain fundamental ideas, such as the construction of hand generators, coils and relays. Eventually they built a central exchange switchboard quite in keeping with the remainder of the plant. With some few alterations and additions, this board has continued in service. The marvelous feature of the entire arrangement is that it operates. The fundamental laws of telephony have been ignored. The material used varies from brass door-knobs to rusty iron horse shoes. About fifty subscribers are connected to this exchange. The total investment, including the original dry cells, would not exceed five hundred dollars, and the income from rentals is little more than sufficient for maintenance.

In the scope of proposed legislation would this plant be considered a telephone exchange, and entitled or compelled to comply with requirements of such a law?

In the consideration of the question of consolidating this system with any modern up-to-date plant, its equipment would necessarily be valued as junk, and low grade junk at that. Mechanical devices to interconnect this with any standard magneto or common battery system are almost beyond the conception of man. To rebuild the plant in order to comply with the demands for a good service to adjacent systems would require an investment of at least $1,500. This would be beyond the means of the present owners. Yet the proposed laws do not state who is expected to make the necessary expenditure to meet such contingencies. This is only one instance. There are hundreds of similar cases. In fact each presents a new problem in mechanical telephony.

St. Louis, Mo. H. P. Fairman.

Did you enjoy reading those letters? All right; send us in an account of one or two of your own experiences. Send the telephone story that made the boys laugh. It's hot weather, and we need some fun on this page. Write to the Editor today.

Leak in Water Main Located By Telephone.

In an effort to locate a leak which, although causing a great deal of trouble, could not be found by ordinary methods, employes of the water company in Bergen county, N. J., made an exploration by means of a telephone. They attached the instrument in a circuit containing a battery to hydrants and other points of contact with the water main, and as soon as they were within 1,000 feet of the break were able to detect it by the increased sound of rushing water, and by progressive tests located the fault very closely. They are now enthusiastic over the device which enabled them to locate the trouble when other methods failed.

Practical Questions and Answers

Cut-out Switch on Three-party Line.

Please tell us how to install a double pole, double throw switch in order to secure the following results: We have a three-party line grounded circuit and we wish to install this switch so that when the switch is open any telephone on the line can call either of the other telephones on the line. When the switch is closed

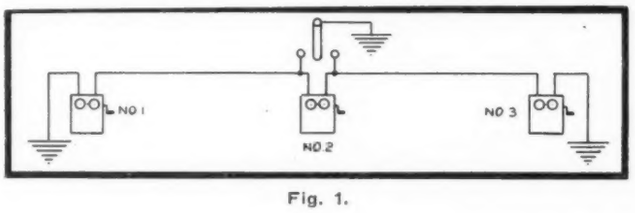


Fig. 1.

one way, we want the middle telephone, No. 2, to be able to call No. 1 without No. 3 hearing the ring; and when the switch is the other way No. 2 should be able to call No. 3 without disturbing No. 1. We enclose a rough sketch in order to make our plan more distinct.

You have not stated whether the line is series or bridged.

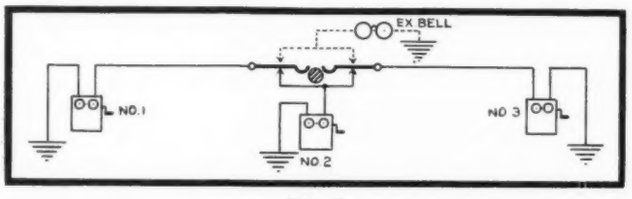


Fig. 2.

If the former, the plan shown in Fig. 1 wil do the work, a single-pole, double-throw switch being all that is required. But if bridged, the simple knife switch will not do. You will have to use some switch which breaks one contact and leaves another "made." One side of an ordinary switchboard key locking in both directions will do this, as in Fig. 2. If you desire to have an extension bell to let No. 2 know when the disconnected station is calling, it can be wired as shown by the broken lines.

Trouble Attaching Condenser.

I have a bridging telephone which talks up finely without a "ring-through" condenser, but when I take out one tip of the receiver cord and put a condenser wire in the binding post, and fasten the receiver tip taken out to the other condenser wire, the telephone is "dead." I find the same trouble with a new condenser, and with a condenser that works in another telephone. This

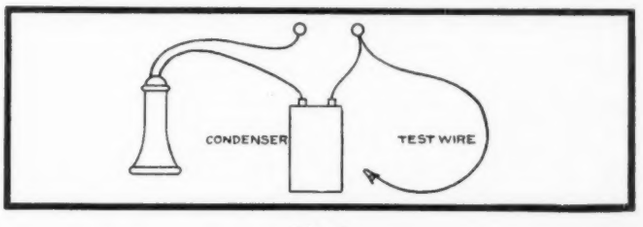


Fig. 3.

telephone is the only one I ever found in which I could not make a condenser work.

This looks very much like an open circuit. Test for it as follows: Insert the condenser as you have described; connect a good piece of wire, as shown in Fig. 3; call it the test wire. Take the receiver off the hook, place it to your ear, and talk or blow into the transmitter. While

so doing, touch the free end of the test wire to each terminal of the condenser, also to the terminal of the receiver nearest the condenser. In this way you can locate the open. If it is an intermittent trouble, you may have to move or jar the apparatus to make it cut out at times.

Details in Account Classification.

Gentlemen: Your article on accounting methods prescribed by the Nebraska Railway Commission are very interesting, and give us much valuable information. I would, however, like to know if under General Accounts—Liabilities, Item No. 16, the total capitalization is entered, or only stock issued. What is treasury stock?

A six-mile line of 16 poles per mile, carrying two No. 14 ground-return wires, valued at $150 when new is replaced with a line of 36 poles per mile, carrying two metallic No. 12 circuits, and one No. 14 circuit, costing in labor and new material $825.00 and $75.00, material taken from the old line. The line taken down was four and one-half years old. How much of this was new construction? What part should be paid out of a depreciation fund?

It is not customary to carry the total authorized capital as a liability, but instead the stock should be entered on the books only as it is actually issued. In case of bonds, however, the entire issue is placed on the books as a liability, and all unsold bonds are held as an asset under the designation "Treasury Bonds." Under ordinary circumstances the only need for an account called "Treasury Stock" would be in case the company buys in some of its own outstanding stock, in which case the charge would be made against such an account. In case such stock is again disposed of, "Treasury Stock" will, of course, be credited.

In this connection, we wish to call attention to what appears to us to be a defect in the Nebraska Commission's Accounting Plan. Under the account "Capital Stock" it is required that "the difference between the actual assets (items 1 to 13 inclusive) and all other liabilities of the reporting company" be used as representing the actual value of the "capital stock." Now let us see what is really included in items 1 to 13 inclusive. By referring to Table No. 1, in TELEPHONY for June 19, and the explanations following this table, we find that the "True Physical Valuation" must be used in representing the actual or tangible assets and further that the "True Physical Valuation" is to be arrived at by deducting the accrued Depreciation from the Actual Cost Price, (either known or estimated). To show what we believe to be the error of this plan, let us use a concrete illustration. Suppose that five years ago certain investors invested, say, $12,000 actual cash in a telephone exchange. Suppose that the expectancy of life of this exchange was estimated to be 10 years, at the end of which time it would have a junk value of say $2,000. On this basis, the depreciation accrued to date would be $5,000, and the "true physical valuation" at the present time, after allowing for this depreciation, would be $7,000. Now if this physical valuation ($7,000) is used as the basis of the present capitalization, what has become of the remaining $5,000 of capital which was invested five years ago? Has it vanished into the atmosphere never to return; and its dividend earning powers with it? Must the stockholders see their good money or capital reduced every year at the same rate the property is depreciating? Possibly we have made some mistake in interpreting the Commission's plan, but if not, is this not a very grave error? It appears to the writer that the assets, and the capitalization based thereon, should be represented by the original actual cash investment in the property. The stockholders are certainly entitled to have the entire amount of their original investment preserved unimpaired either in the form of real property or in the form of money, and they should receive dividends upon such original investment until it is returned to them in full measure.

There are two ways of allowing for depreciation in an equitable manner. One is to use the Commission's plan of using the current value of the property (after deducting accrued depreciation) in the Property Accounts and to place the amount of Accrued Depreciation to the debit of a Depreciation Reserve Account, for which purpose the account numbered 15 in the Opening Trial Balance Accounts may possibly be intended. In this case, there would be no Depreciation Account whatever under the heading "Liabilities" and the actual value of the Capital Stock would then be obtained by taking the difference between the amount represented by items 1 to 13 and item 15, and the amount represented by items 17 to 21 inclusive, 23 and 24, item 22 being superfluous in using this method.

Another way, and what to our mind is the better method, is to use the original cost price (either actual, or estimated with as close accuracy as possible) in showing a charge to the property accounts. A liability Depreciation Account should then be set up as an off-set to the book value or original cost price of the plant by debiting the earnings (or, to be exact, the accumulated surplus account) with the amount of the depreciation accrued to date. In this manner the liability Depreciation Account will provide a reserve sufficient to cover the loss of investment represented by discarded equipment after it has served its useful life. We will endeavor to illustrate this method by showing the nature of the entries necessary to properly provide for the handling of the transactions indicated in the second part of the above question, and trust that in so doing the question will be fully explained. The Plant or Property Account should appear thus:

PLANT ACCOUNT.

Dr.

1-1-05. Six miles of line as specified above (first cost).... $150.00

Cr.

7-1-09. Same line discarded and carried to Plant Deductions $150.00

Supposing that the estimated life of the line was 10 years, and the final scrap value, after allowing for cost of dismantling, at the end of its natural life was estimated to be $10, the depreciation account should appear thus:

DEPRECIATION ACCOUNT.

Dr.

7-1-09. Carried to plant deductions upon discarding the said line $63.00

Cr.

Set aside from current earnings for depreciation on line:

First year	$14.00
Second year	14.00
Third year	14.00
Fourth year	14.00
Fifth year (one-half)	7.00
	$63.00

The "Plant Deductions" (or, as it is usually termed the "Replacement" Account) should appear thus:

PLANT DEDUCTIONS.

Dr.

7-1-09. Line discarded as specified (Brought down from plant account.)	$150.00
Cost of taking down, say	25.00
	$175.00

Cr.

From Depreciation Account	$63.00
From sale (or value) of junk	75.00
Loss (charge current Profit and Loss Account)	37.00
	$175.00

The loss of $37.00 represents the expense incurred by reason of replacing the line before it had reached the limit of its natural life. In case an extensive change in equipment of this nature is found necessary, entailing a considerable loss, it may, instead of being charged to the current Profit and Loss Account, be charged to a suspense account set up to cover such extraordinary and unforeseen losses entitled "Extraordinary Casualties Suspense Account" and this account may then be credited monthly with a certain pro-rated amount which will be debited to the account "Contingencies Extraordinary," this last named account then being considered as one of the current Profit and Loss Accounts.

The Telephone in the Courts

Conducted by A. H. McMillan

Foreign Corporations in New Jersey.

The Bell Telephone Company of Pennsylvania obtained judgment in the District Court of Atlantic City against the Galen Hall Company for the contract price of an advertisement inserted in the "Bell Telephone Company of Pennsylvania Directory," a book published in Philadelphia, Pa., by a corporation of that state. In the trial the court refused to grant a motion to non-suit the telephone company, on the ground that it was a foreign corporation transacting business in New Jersey, and without having complied with the corporation act of April 21, 1896 (P. L., p. 277). The telephone company received a judgment which the defendant sought to have set aside because of the court's failure to grant the motion.

For the purposes of the motion, it was admitted that the applications taken in New Jersey for space in the publication did not become contracts unless and until they were accepted by the officials of the Pennsylvania corporation in that state. If thus accepted, performance took place by the printing of the advertisement in a book made and published in Pennsylvania. The Supreme Court of New Jersey, in deciding the telephone company's appeal, held that the business was transacted in Pennsylvania, and said, "The circumstance that such book also circulated in this state as a telephone directory did not render either the making of the contract or its performance the transaction of business in New Jersey, any more than would the circulation here of a Pennsylvania newspaper that contained an advertisement of an Atlantic City hotel." The judgment for the telephone company was affirmed. Bell Telephone Company of Philadelphia vs. Galen Hall Company, 72 Atl., 47.

Injuries From Construction.

Suit was brought against the Kinloch Telephone Company of St. Louis, Missouri, for personal injuries alleged to have been caused to Edwin F. Merritt by a hole or depression in a portion of the sidewalk. At the place where the depression was found the telephone company had a pole which it is desired to remove and replace with a new and different one. Before doing so, it obtained, upon proper application, a written permit from the city. The charge was made that under the permit the telephone company made an excavation for the purpose of removing the old pole and putting in a new one, and it so left the ground that when the dirt settled a hole was made which was permitted to remain, and into which Mr. Merritt slipped. The telephone company offered evidence to show that the pole was properly reset, while the evidence on behalf of the plaintiff was to the contrary effect. A judgment, in the sum of four thousand dollars, for the plaintiff, against the telephone company, was affirmed by the Supreme Court of Missouri. In doing so, it made a number of interesting rulings, as follows:

Non-expert witnesses who had seen the depression in the earth at the side of the pole might testify that in their opinion the depression was caused by the settling of the earth, it being difficult for them to better describe their impressions.

The evidence justified a finding that the depression existed where the company had dug the hole for the new pole.

The issuance by a city of a permit to a telephone company for leave to replace a telephone pole charges the city with knowledge of a depression occasioned by the sinking of the earth following the setting of the new pole.

The evidence showing that the depression had existed for such a length of time as to charge the city with negligence in failing to discover and remedy the default. Merritt vs. Kinloch Telephone Company, 115 S. W., 19.

Old Town Franchise Controls.

Judge Windes has rendered a decision which grants relief to the telephone users of Austin, Oak Park and Cicero, Illinois, and incidentally diminishes the revenues of the Chicago Telephone company. He has ordered that a writ of mandamus be issued to compel the telephone company to continue to furnish service without a toll charge between all points located in the old town of Cicero, which includes that part of the Thirty-fifth ward known as Austin and the towns of Oak Park and Cicero.

Last January an attorney acting for the village of Oak Park filed a petition for a writ of mandamus. He alleged that under the franchise granted to the Chicago Telephone Company by the town of Cicero, as it existed in 1908, the company agreed to furnish telephone service without an extra toll charge to subscribers residing in any part of the town. In 1899 that part of Cicero known as Austin was annexed to Chicago, and in 1901 the remaining part of Cicero was divided into the villages of Oak Park, Berwyn and the present town of Cicero.

Despite these changes, the Chicago Telephone Company continued to live up to the terms of the Cicero franchise until last January, but on the first of the year the company commenced to demand a toll of 10 cents for all connections between Austin and the villages of Oak Park, Berwyn and Cicero.

The defense of the telephone company was based on the contention that since the annexation of Austin to Chicago the company was relieved from the duty of making connections from or to territory outside the city limits free. Its attorneys also contended that under the ordinance of 1907 the company could not furnish such service free.

The court having decided against them, the telephone company's attorneys have prayed an appeal, but in the meantime the tolls will be charged up, although no attempt will be made to collect them.

Negligence in Digging Pole Hole.

The Central Union Telephone Company dug a pole hole in a street in the city of Conneaut, Ohio, under an agreement with the city's electric light superintendent to raise a pole therein and carry the city's electric light wires at an intersection of streets. The city neglected to put up the pole for three months, during which time the lighting superintendent made temporary provisions for the wires, and, several times finding the hole uncovered, recovered it. A pedestrian fell into the uncovered hole, receiving injuries for which he recovered damages from the city. The city then brought suit against the telephone company to recover the damages it had been compelled to pay. The city was given a judgment in the United States Circuit Court, but on appeal, the Circuit Court of Appeals reversed this judgment. The higher court held that the city had notice of the defect through its lighting superintendent, and was solely negligent in permitting the hole to remain in the street unprotected, and therefor could not recover from the telephone company any part of the damages paid the injured pedestrian. Central Union Telephone Company vs. City of Conneaut, 167 Fed., 274.

News of the Week

Project for Independent Development in Oklahoma.

Under date of July 19 TELEPHONY'S correspondent for the state of Oklahoma telegraphs that Franklin Smyth is at Guthrie preparing to take out a charter for an Independent telephone company to compete with the Pioneer Telephone & Telegraph Company (Bell), throughout the state. Mr. Smyth claims to be backed by Chicago capital. He asserts that the main office for the company will be Muskogee, and that local systems in all large towns will be built with interconnecting long-distance lines. He has applied for a franchise in Muskogee, but refuses to definitely discuss plans for the future at this time.

Meeting of Executive Committee of International Association.

On Saturday, July 17, the executive committee of the International Independent Telephone Association met at Chicago and discussed plans for Association activities during the fall months. Among those in attendance were President E. H. Moulton, of Minneapolis; A. C. Davis, of West Virginia; B. G. Hubbell, Buffalo; C. Y. McVey, Cleveland; W. C. Handlan, Wheeling, W. Va.; J. B. Ware, Chicago; P. C. Holdoegel, Iowa; Frank H. Woods, Nebraska; J. S. Brailey, Jr., Ohio; W. H. Bassett, Missouri, and F. L. Beam, Ohio.

Among the important announcements made to members of the Association and the state officers is the plan for holding a conference, which is sure to have an exceptional influence on future policies, at Niagara Falls on September 4, 5 and 6, 1909. At this meeting a full and careful open discussion of problems of the organization will be undertaken, and plans will be made to broaden and intensify the work of the Association. Those participating in the meeting will be members of the standing committees of the Association, including the advisory board. It is expected that nearly every state in the Union will be represented, and a large number of them by several attendants. Most of the sessions of this conference will not be restricted to members of the committee and advisory board, but Independent telephone men who are sufficiently interested to attend the meeting will have every opportunity to take part in the proceedings. Plans will be made for the coming convention in the early winter months, and other matters of great importance to the movement will be discussed.

At the meeting of the executive committee reports from various quarters were heard and they are so favorable that all of the members were very enthusiastic about conditions throughout the country. They understand that conditions have never been so favorable for the Independent companies as at present, and believe the industry is due to experience its greatest period of prosperity and development in the next few years.

The Niagara Falls conference will give operators and investors an exceptional opportunity to get in touch with conditions throughout the country, and at the same time to enjoy a trip which has very many pleasant features. Railway and hotel rates are reasonable and everyone who takes a few days off to attend this meeting will have an unusual opportunity for enjoying the remarkable scenery at the Falls, as well as for work. Among the members of the advisory board who are expected to attend this meeting are: A. E. Boqua, Arkansas; Arthur Wright, California; J. F. Demers, Canada; F. D. Houck, Pennsylvania; Manford Savage, Illinois; Chas. S. Norton, Indiana; P. C. Holdoegel, Iowa; W. P. Hemphill, Kansas; Frank G. Hoge, Kentucky; E. B. Fisher, Michigan; C. J. Garlow, Nebraska; J. B. Shannon, Mississippi; Dr. S. T. Neill, Missouri; Wm. A. Wynne, North Carolina; Frank L. Beam, Ohio; Robert Tucker, Oregon; D. A. Walker, Texas; H. W. Buchanan, Vermont; J. Walter Barnes, West Virginia; W. N. McAnge, Virginia, and H. D. Critchfield, Chicago, Ill.

North Dakota Independent Convention.

The 1909 convention of the North Dakota Ind. Tel. Association was the largest and one of the most beneficial conventions ever held by this organization. About forty delegates were present which is a much greater number than have ever attended any of their conventions heretofore. In the absence of President Jacobson, Vice-President L. C. Lane held the chair.

Friday afternoon after the meeting had been called to order, President Kerlin gave an address of welcome in behalf of Mayor Whitman and the people of Devils Lake, which was responded to in a very appropriate manner by C. H. Tolan. Interesting papers by L. D. Richardson and C. H. Coar of Minot were read before the convention and Hon. John Carmody also read a paper upon "Legislation," which was well received by all.

An investigation proved that there were 225 telephone companies operating in North Dakota and although they do not all belong to the Association as yet, they are rapidly coming into it.

Saturday morning after the convention had been called to order Col. Jos. M. Kelly gave an address of welcome in behalf of the Commercial club of Devils Lake, responded to by President L. C. Lane. A paper contributed by Miss Margaret Quigley, chief traveling operator for the Northern Telephone Company, was read before the convention, after which the time was given to the discussion of better service and compensation of employees.

The following officers were elected: President, Hon. John Carmody, Hillsboro; vice-president, J. Hegge, Hatton; secretary and treasurer, L. C. Lane, Kensal.

Long-Distance Rates Reduced by Independent Company in Western New York.

It is reported that the Federal Telephone & Telegraph Company has inaugurated a substantial decrease in its rates for long-distance service over its comprehensive system in western New York. Referring to this change the Buffalo *Express* published what is understood to be an interview with President B. G. Hubbell in which he states:

"It has been our policy since organization to offer our long-distance service at the lowest rates at which good service can be sold, and in a recent investigation of the subject we found it possible to make some material reductions in telephone charges to many important points.

"During the year our long-distance service has increased rapidly in volume, our June billing in Buffalo showing an increase of 24 per cent over the first months of this year, and because of increasing volume of business offered us we are in position to operate our long-distance lines at a decreased rate of expense. Another point of advantage lies in a recent development of phantom circuits.

"This has made it possible to increase our volume of long-distance business without materially increasing the investment. To those points where we have a special equipment of circuits we are enabled to give a material reduction in rates and as soon as these circuits are extended other reductions will be made.

"I assume the public in its hurry soon forgets the rates

of long-distance message before competition and it might be interesting to look back and make some comparisons. The Buffalo-Jamestown rate before competition was 90 cents, now 20 cents; Buffalo-Rochester rate before competition, 75 cents, now 25 cents; Buffalo-Geneva $1.00 before competition, now 35 cents. There are hundreds of such comparisons which can be made which prove greater than words can tell the wonderful savings to telephone users through the active competition which the Independent telephone companies have afforded in the past few years. Our long-distance lines reach 800 towns in this State, and about double that number in Ohio and Pennsylvania, and granting five persons to a telephone there are about 1,000,000 people within the business district of Buffalo which can be reached almost exclusively over our lines."

Hearing of Dubuque Merger Case Set for September 8.

At last the Iowa telephone men who have been looking forward to the hearing of the case growing out of the merger of the Bell and Independent companies at Dubuque are likely to have their anticipations gratified.

The date Sept. 8 has been set for a preliminary hearing before Commissioner Herbert L. Moore.

The members of the committee of the International Independent Association in charge of this litigation are J. B. Ware and O. C. Snider. It is understood that as a result of a discussion at the meeting of the executive committee of the International Association held last Saturday, the executive committee of the Iowa Independent Telephone Association will appoint an associate to act in co-operation with the present members of the committee.

Governor of Indiana Orders Cumberland Telephone Company to Quit Helping Gamblers.

Governor Marshall of Indiana has ordered the Cumberland Telephone Company, operating in Southern Indiana, to cut its service wires leading to a ball park at Clayburg, near Jeffersonville, where pool selling and other gambling reports are received. The governor stated that unless the service was discontinued at once the company would be prosecuted for being a party to the violation of the state laws against gambling. The governor's action has caused Indiana telephone and telegraph men to take notice of the statute and they are taking advice as to their liability in such matters.

Eastern Bell Properties to Be Combined with A. T. & T. Co.

Announcement has been made in the Eastern states that an offer has been made by the American Telephone & Telegraph Company, to take over the entire stock ownership of the New York & New Jersey Telephone Company and the Bell Telephone Company of Pennsylvania, in which the American Telephone & Telegraph Company already has a controlling interest. The Pennsylvania company controls the Chesapeake & Potomac Telephone Company, the Diamond State Telephone Company and the Delaware & Atlantic Telephone Company. A later report announces a similar offer to stockholders of the Bell Telephone Co. of Buffalo.

New York City Proceeding Against Management of Bell Conduit System.

Francis K. Pendleton, corporation counsel of the City of New York, has commenced action in the Supreme Court against the Consolidated Telegraph and Electrical Subway Company and the Empire City Subway Company, Ltd., alleging that both have violated their contracts with the city by failing to submit proper accounts of their operations. William P. Burr, acting corporation counsel, who is in charge of the case, is alleged to have stated in an interview that "This whole affair constitutes a gigantic fraud. As a matter of fact the Consolidated company has leased or rented space to but one company, the Edison, and the Empire company is controlled by the New York (Bell) Telephone Company. It is easy to draw your conclusions as to what it all means."

Central Union Telephone Company to Be Investigated.

At the second hearing of telephone companies before the Indiana Tax Board, some of the Independent companies insisted that they had been assessed out of proportion to the assessment against the property of the American Telegraph & Telephone Company, and the Central Union Telephone Company, and asked that their assessments be reduced. It was not charged that the Bell property, which is known to have deteriorated rapidly, is assessed too high, but simply that the Independent property is assessed too high in comparison.

At this hearing the board explained that the telephone companies were not assessed arbitrarily so much a mile, or every company on the same basis, but that every company was assessed upon capital stock and bonded indebtedness and the showing made as of so much for every mile of line operated. Thereupon James S. Brailey, Jr., president of the New Long-Distance Telephone Company, threw a bomb into the hearing that occasioned genuine surprise among the members of the tax board, when he asserted that the Central Union Telephone Company had failed year after year to make a complete return of the valuation of its property for taxation. He advised the board that the Central Union Telephone Company owed the American Telegraph & Telephone Company, or parent company known as the Bell company, between $18,000,000 and $20,000,000 borrowed money, and that all this money went into the property of the Central Union.

The tax commissioners said the allegation was an important revelation, and if found true there should be a several-million-dollar increase in the valuation of the company for taxation. At this juncture the return made by the Central Union was examined, and no mention of the $18,000,000 of borrowed money was found. There is an item of $1,200,000, however, which is designated as interest and compensation, which Mr. Bailey said represented the interest paid by the Central Union on the $18,000,000 loan. The board said this was the first information it had received that the Central Union owed the American Tel. & Tel. Company the large sum mentioned, and said a rigid investigation would be made. Some interesting facts are likely to be made public by the investigation and the company's reports will be searched for several years back to reveal whatever evidence there may be of the nature and location of an enormous floating debt.

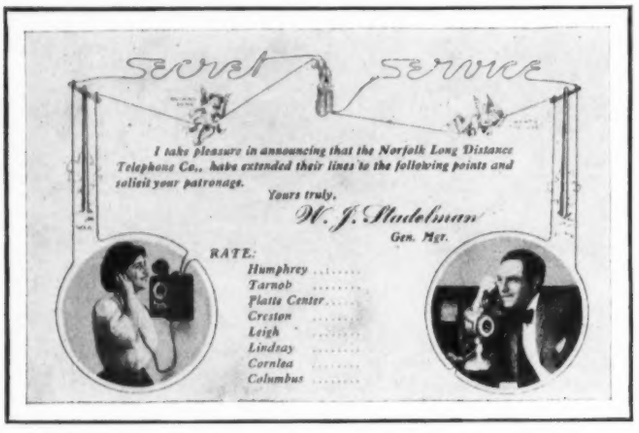
Induction Case Appealed to Supreme Court.

The case of the Western Union Telegraph Company and the Lake Shore Railroad Company against the Chicago, Lake Shore & South Bend Interurban road has reached the Indiana Supreme Court, on appeal from the La Porte Circuit Court. The complaint alleges that the steam railroad and telegraph company are seriously crippled and interfered with by induction from the high-potential, single-phase trolley system operated by the defendant company. Complainants sought to enjoin the traction company from operating its system, on the ground that the high voltage has demoralized by induction their method of electrical communication for train dispatching and other purposes. The trial court denied the injunction and held that there is no priority of right or monopoly of the air inherent in any company. The Lake Shore steam road alleges in its

brief on appeal that it uses the telephone almost exclusively in transmitting train orders, and asserts that the operation of the high-voltage overhead trolley circuit by single-phase alternating current renders the telephone system useless at times and greatly hinders the operation of its telegraph lines. The decision of the Supreme Court will be watched with great interest, since there are many companies in the state which have suffered in a like manner.

An Announcement of Long-Distance Connections.

The exchange of the Norfolk Long-Distance Telephone Company, at Norfolk, Neb., is building up its long-distance business at an exceptionally rapid rate, largely owing to the ingenious advertising ideas and business-getting



A Well-Known design Modified to Advertise Long Distance.

plans of General Manager W. J. Stadelman. One of his latest devices is the mailing to subscribers of a postal card carrying rates to newly connected points. The design of the card is shown in the accompanying illustration, rates being filled in with a pen.

Merger of Competitors in Pennsylvania May Be Set Aside —Attacked Under Anti-Trust Laws.

The Slate Belt Telephone Company, operating lines in Northampton and Monroe counties, with headquarters at Nazareth, Pa., recently made a contract to exchange traffic with the Bell telephone company. Since 1900 the Slate Belt company has had a contract calling for exchange of traffic with the Consolidated Telephone Companies of Pennsylvania, now forming a part of the American Union system, with headquarters at Harrisburg. On May 25 last the Slate Belt company entered into a secret agreement with the Bell telephone company, in which it contracted to deliver its long distance business to that corporation. Later the Slate Belt company served notice on the Consolidated companies that on July 12 the contract existing between the two corporations would be terminated.

Immediately upon receipt of this notice an investigation was made, and a petition filed with the attorney general of the State of Pennsylvania charging violation of the anti-trust laws of the State. The attorney general notified the Slate Belt company to refrain from making disconnection with the Consolidated system, and appointed July 14 for a hearing. At this hearing, held before Deputy Attorney General Cunningham, it developed that the connection had been severed notwithstanding the notice, but the officers of the Slate Belt company agreed to restore it immediately. At the hearing the Consolidated companies were represented by their chief counsel, Lyman D. Gilbert.

Commenting on this case the Harrisburg *Star-Independent* says:

"The officers of the Consolidated Telephone Companies of Pennsylvania have expressed their intention of conserving the public right to maintained competition. The Slate Belt Telephone Company has built up its business as an Independent telephone company largely upon the advantages it enjoyed in having an outlet through the Consolidated lines. As a result of this advantage it has built up a business very largely in excess of the business of the Bell telephone company in the territory in which it operates. It is this fact that led the Bell company to offer terms to induce the Slate Belt Telephone Company to tie up with the Bell lines. A copy of the contract between the Slate Belt Telephone Company and the Bell Telephone Company of Pennsylvania was filed with the attorney general and is

"Lawyers who have studied the case are agreed with Mr. Gilbert that a combination such as the Bell company has attempted to effect with the Slate Belt Telephone Company is clearly a violation of the Constitution of the State of Pennsylvania. Mr. Gilbert in his arguments showed that if the alleged conspiracy were carried out it would result to the serious injury of the public. He argued that it would be certain to bring about a deterioration of the service, higher rates, and arbitrary methods such as prevailed before competition in the telephone business was an established fact. While the present proceeding is merely a preliminary investigation on the part of the attorney general, it has already had its results, in that it has forced the restoration and maintenance of competitive telephone service in the Northampton-Monroe district."

Iowa Railroads Preparing to Install Telephones for Public.

It is understood that railroads in the State of Iowa are active in the installation of telephones, as called for in the new law, which went into effect July 4. Under the statute they are obliged to install a telephone in each passenger or freight depot in any city or town where a telephone exchange is maintained for public service. Telephones so installed are to be connected with, and for the use of the patrons of the exchange.

Silent Solicitor of Long-Distance Business.

The Federal Telephone & Telegraph Company, with headquarters at Buffalo, N. Y., and lines covering western New York state is putting in force comprehensive plans

A Thought on Long Distance Service
THE Bell Company says it reaches New York and Chicago. We admit we don't, but want to advertise the fact that we give almost exclusive Long Distance service to nearly 1,000,000 people within your wholesale and retail district.
¶In the spirit of fairness, we urge you to give your New York and Chicago business to the Bell, and, at the same time give us your business to those 1,000,000 or more possible customers we have done so much to bring within your telephone reach.
Federal Telephone & Telegraph Co.
Good Service—Low Rates—Appreciative Attention and Exclusive Connections worth your while.

Advertising Reproduced From a Blotter Distributed Among Subscribers.

for building up its long-distance business. The company's "Long-Distance Day" plans, successfully carried out by all its employees under the direction of President B. G. Hubbell, was the largest project for advertising long-distance business which has ever been undertaken, but it is following this up with other devices appealing to all who are in a position to use its lines to talk out of town. Among the new advertising devices is a neat little blotter, as shown in the accompanying reproduction.

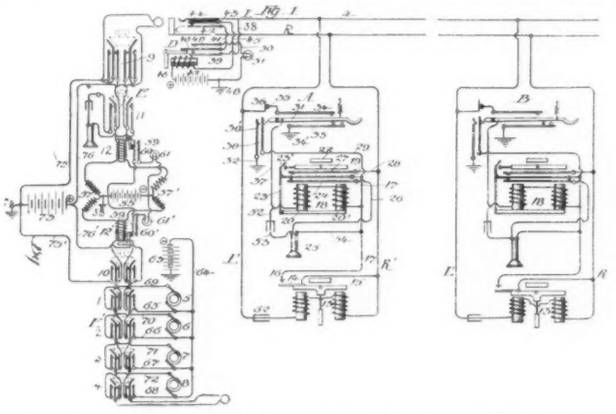
Telephone Patents

Conducted by Max W. Zabel

PARTY LINE TELEPHONE SYSTEM.

Homer J. Roberts, C. A. Soans and A. H. Graves, Chicago, Ill., patent 926,510, June 29, 1909, assigned to Homer Roberts Telephone Co.

The party-line telephone system here shown comprises line wire *L*, *R*, running from the sub-stations *A*, *B*, to the central station, at which central station is provided the calling equipment, the central station having four-party ringing keys, 1, 2, 3 and 4, which actuate the harmonic ringers 13 at various sub-stations, selectively. Whenever any harmonic ringer is actuated, it closes a circuit through the contact 16, thereby sending current through the relay 8, which thereupon locks in the subscriber at the station when the ringer is operating. When the subscribers are through talking, current from the battery 73 is projected over the line wires, and this again restores the relay 18 to its ordinary non-talking position, by reason of the fact that the spring 19 is then again engaged by the latch spring 23, the armature of the relay being actuated to properly perform this function. The armature of the relay 18 is operated in the opposite manner to restore talking

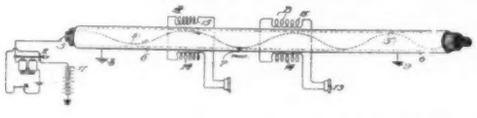


connections when the ringer 13 operates, as this armature acts against the spring latch 23 to release the spring 19. Further details as to calling parties on the same line over which a call is initiated are taken care of by means of the instrumentalities as shown at the central station.

FAULT LOCATOR FOR ELECTRIC CABLES.

W. O. Pennell and H. L. Hoffman, Kansas City, Mo., patent 925,594, June 22, 1909.

This invention contemplates the provision of apparatus by which grounds or other faults in a cable may be detected, and is designed to eliminate the influence of the

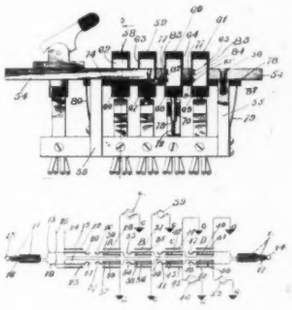


current flowing in the sheath of the cable within which the faulty conductor is located. As shown, there is a cable having a sheath 6, and the faulty conductor 5 is connected with a vibrator and battery 11. At 7, the conductor is shown as grounded to the sheath, and in order to locate this ground, a detector is used, having two coils, 14 and 15, symmetrically placed with respect to the sheath 6, so that a current from the interrupter 2 on its return circuit over the sheath will not influence coils 14 and 15, as they are symmetrically placed with respect to the sheath 6. The interrupter current, however, flowing in the conductor 5, this conductor being unsymmetrically located with respect to the coils 14 and 15, influences these coils, and causes vibration of the diaphragm in the receiver 13. It is claimed that this interrupter current, in flowing back to the battery 11, divides at the fault 7, and part of it flows back over the ground 9, and part back over the ground 8, so that a detector having but one coil might be influenced not only by the current in the conductor 5, but also the current in the sheath.

SWITCHING APPARATUS.

M. S. Conner, Rochester, N. Y., patent 926,175, June 29, 1909, assigned to Stromberg-Carlson Tel. Mfg. Co.

This four-party selective key has the circuit arrangements as shown in the diagramatic illustration, and has the mechanical construction, as also shown, in which there are four plungers, 58, 59, 60 and 61, each of which has a ratchet plate 62, 63, etc. When the key is partially depressed, the

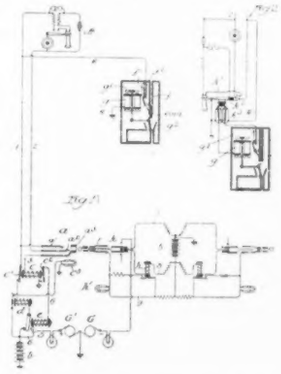


sliding bar 77, which is controlled by the springs 79 and 80, enters into the notch 83, which holds the key which has last been actuated in a partially depressed position. If the key is further depressed, of course the ringing springs will be actuated, but the key can only return part way, on account of the plate 64 and the bar 77. The actuation of another key restores any other keys which are previously depressed.

TOLL APPARATUS FOR TELEPHONE EXCHANGES.

Sherwood J. Larned, Chicago, Ill., patent 926,199, June 29, 1909, assigned to Western Electric Co.

This toll box arrangement is designed to overcome the



use of a key by the central operator, both for depositing a coin or returning a coin in the normal operation of coin boxes. The coin box is designed to have a coin deposited before the subscriber can get "Central," and a relay *g* controls the deposit of the coin, either to the cash box or back

to the subscriber, as will be apparent from the illustration. At the Central office, a key *k* is used, in connection with the answering plug *l*. When the operator inserts the plug in the circuit, the usual connections are established; then, if the operator withdraws the plug and operates the key *k*, negative battery current from the generator *G'* flows over the circuit 1, and restores the coin to the subscriber. But if the connection is obtained, and the subscriber has hung up his receiver, then through the operation of the cut-off relay *c*, the line relay *d* and the slow-acting relay *e*, when the operator withdraws the plug the cut-off relay is de-energized and allows its armatures to fall back. An armature *c'* connects the conductor 1 with the extension leading to the armature of the relay *e*, before said armature has broken connection with the generator *G'*, so that, for the moment, positive battery current flows over the relay *g*, and allows the coin to be deposited in the cash box. In Fig. 2, the relay *g* has its connections controlled in one of two ways with the circuit by the switch-hook, so that but one class of current is necessary to operate the relay.

In the Manufacturing Field

Simplicity of Changes Required to Install Monarch Selective Ringing System.

A striking illustration of the ease with which a reliable and economical selective system can be installed is pointed out in the case of the Bremen (Ind.) Telephone Company. This company, realizing the economy of selective lines, decided to adopt the direct current system of the Monarch Telephone Manufacturing Company. The switchboard

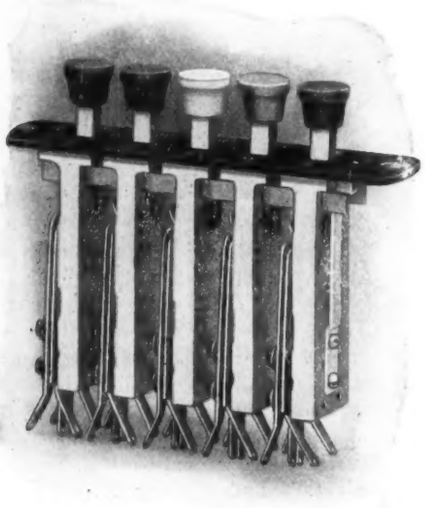


Fig. 1—The Master Key to Control Direct Current Selective Ringing.

equipment was ordered, and the total amount necessary for the two positions to be equipped is surprisingly small. For each position there is a master key like that shown in Fig. 1 and a couple of resistance coils. The Bremen company will add to this a battery of dry cells which, it is said by the manufacturer, owing to the reliability of the system, may be old cells that are almost spent. No ringing device is used.

Of course the ringers on the selective lines must be of the direct current selective type as shown in Fig. 2, and while the Bremen company ordered a few complete selective telephones, a number of ringers alone were also ordered, so that the old telephones could be changed to selective instruments.

The manufacturers claim as advantages for the system that it is simple and correct in principle, and that with the quantity of mechanical equipment designed especially for it by the Monarch company it is less trouble to maintain than an ordinary bridging system. This is largely due to the design of the ringer, which though having the mechanical construction of a regular Monarch ringer, operates on the principle of a vibrating bell.

The Superior Paper Fastener, which is a very satisfactory device for fastening together several sheets of paper, such as letters, specifications, etc., is manufactured by the Superior Manufacturing Company of Sidney, Ohio, and no longer by the company mentioned in our issue of May 1. The manager of the company is Mr. T. A. Faulder.

Engineers Working on Details for St. Joseph Exchanges.

Although the order for new equipment to be placed in the St. Joseph, Missouri, exchanges has been definitely placed with the Dean Electric Company, the exact sizes and amount of equipment has not yet been determined. It is understood that the ultimate capacity will provide for at least 12,000 lines in two exchanges, Main and South. The contract includes a four-position multiple toll board, duplicate power equipment, trunking sections for communication between the two offices, toll line test panels, full desk equipment, and at least 3,000 telephones. The Main office will be equipped with 10 sections of switchboard, and the South office will have four sections. All apparatus is arranged for harmonic ringing. The Dean company will probably announce the precise dimensions of the equipment

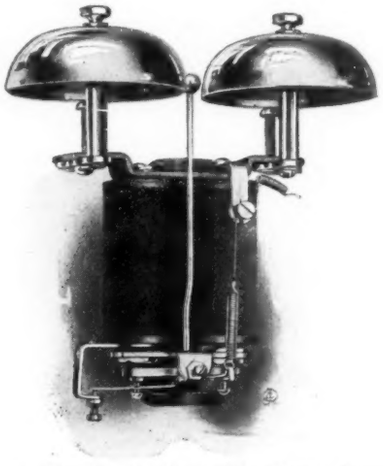


Fig. 2—Monarch Ringer for Use with Direct Current Selective System.

after the consultation between its engineers and representatives of the telephone company has enabled these matters to be determined.

A New Line Lightning Arrester.

A novel idea is worked out in the line lightning arrester which has just been put on the market by the Insulator Arrester Company, 523 Board of Trade building, Duluth, Minn. The company has issued a booklet which gives an interesting discussion of lightning protection in general, and special views of the subject which bear upon its device. The illustration shows how the metal arrester is mounted on the pin or bracket, below the insulator.

Briefly describing the device, it consists of two specially shaped metal tubes, separated from each other by a space of about ⅛ inch. The separation is made permanent and

uniform by inserting four porcelain blocks at equal distances around the circumference. The outer tube is attached to the line and the inner tube is grounded. The porcelain blocks serve the purpose of insulating the line portion of the device from the grounded section, in addition to their separating function.

The advantages of the device are summarized by the

Insulator Arrester, Mounted and Connected to Line.

manufacturers in the statement that it provides a "non-attention outside arrester with an always dry insulation between the line and ground electrodes; a large surface and comparatively short gap; a straight and bare ground wire." A more ample discussion is contained in the literature issued by the company.

The Kellogg Pole Yard at Escanaba.

A panoramic view of the immense cedar pole stock of the Kellogg Switchboard & Supply Co., at Escanaba, Michigan, was recently obtained and is produced herewith. It is interesting because of the difficulty in obtaining satisfactory views of this kind of a subject, where a wide area must be covered, and yet the plate must bring out clearly the important details, showing quality of stock, manner of piling, handling, wagon and train loading. This pole yard is economically laid out for quick shipments and low prices.

The "Office 'Phone."

A desk stand containing in its base a signal receiving combination consisting of a small condenser in series with a loud-ringing alternating current buzzer is a new device just put on the market by the Enochs Electric Company, of St. Paul, Minn. The stand is of the regular type sold by this company, equipped with its transmitter and "D. C." (direct current) receiver.

The base is no larger than what has come to be considered standard, and it is possible to mount the condenser and the buzzer in the base only because the D. C. circuit, which is used, contains no induction coil or impedance coil, and as the condenser is used in the ringing circuit only it can be made in a very small size.

The instrument uses a two-conductor cord, and requires no signal case or bell box, the terminals of the desk cord being connected directly to the line by means of any style of binding post.

The annoyance of having two bells ringing on a desk and having to try first one telephone and then the other to determine which is calling is completely done away with by this instrument, and in addition, the sound of the buzzer is much more pleasing than that of a bell to the busy man. The advantage of having no signal case to mount is an important one in any business office.

Where special arms are used instead of placing the desk stand on the desk, the "Office 'Phone" proves a still more valuable piece of apparatus when used in conjunction with an arm, such as the Equipoise. The entire instrument is contained in the desk stand mounted on the arm, and the

The Office 'Phone—A New Desk Stand Having a Buzzer in the Base.

difficulty of mounting a signal case in connection with such an extension arm is avoided.

The "Office 'Phone" is manufactured and sold exclusively by the Enochs Electric Company, of St. Paul, Minn., which has recently issued an interesting little folder on the subject.

Stock of Poles Carried by the Kellogg Switchboard & Supply Company in Its Big Yards at Escanaba, Mich.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

NEW COMPANIES.

MARKED TREE, ARK.—The Marked Tree Telephone Company has been incorporated at this place and the following men have been chosen as officers of the company: E. Ritter, president; W. L. Pfleger, vice-president; W. B. Avera, secretary-treasurer and manager.

PORT BYRON, ILL.—At a meeting of Independent lines running into this place, the Port Byron Telephone Company was organized and officers elected for the ensuing year, as follows: President, A. H. Brewster; secretary, A. Saddoris; treasurer, E. M. Rogers; directors, Ed Coe, A. H. Wendt, W. H. Groh, Wm. McRoberts and H. Schave.

PENDLETON, ORE.—The Holdman Telephone Company, with Fred L. McCrea, R. O. Earnhart, R. A. Bissenger as incorporators, has been organized. The company is capitalized at $3,000.

WALDPORT, ORE.—The Yachats Telephone Company is the name of a new telephone company which has been incorporated, with principal place of business at Waldport. The company is capitalized at $2,500, and the incorporators are: O. V. Hurt, W. M. Brooks and Silas Howell.

EMAUS, PA. — Articles of incorporation have been filed by Charles H. Stoneback, Frank C. Newrouser, Coopersburg; Charles E. Erney, Frank Wagner and others, of Salisbury, and George F. Carter of Emaus, for the Mountainville Telephone Company. The company is incorporated for 20 years. Chas. Bitting is the secretary of the company and Charles H. Stoneback is treasurer.

PHILADELPHIA, PA.—It is reported that application will soon be made for the incorporation of the National Telephone & Telegraph Company, being organized in the interest of the Keystone Telephone Company and other Independent concerns, to form part of a new long-distance telephone system.

STRASBURG, PA.—The Strasburg Telephone Company has applied for a $10,000 charter. As soon as the charter is received the company will begin on the construction of its lines.

YELLOW HOUSE, PA.—Irvin T. Ehst of Boyertown, with the stockholders and directors of the Manatawny Rural Telephone Company, will make application for a charter for the company. The new company will have its trunk line starting at the limits of Reading, to Boyertown. Branches will run to Stonersville, Birdsboro, Douglassville, Glasgow, Gablesville, Shanesville, Spangsville, Griesemersville, Pleasantville and Pikeville, and the trunk line will reach Mt. Penn, Black Bear, St. Lawrence, Jacksonwald, Oley Line, Yellow House, Earlville, Worman, Greshville, Morysville and Boyertown, the principal exchange to be at Yellow House. The company is capitalized at $5,000, and the officers of the company are George H. Schearer of Yellow House, as president; Walter S. Ludwig of Athol, secretary, and Mahlon E. Weidner of Earlville, treasurer.

BUTLER'S LANDING, TENN.—Articles of incorporation have been filed for the Butler's Landing Home Telephone Company, with a capital stock of $6,000, by T. W. Roberts, V. B. Mayfield, J. A. Roberts, J. M. Lynch and W. B. Clark.

OBION, TENN.—A charter of incorporation was granted the Obion Telephone Company a short time ago, the capital stock being placed at $5,000. W. G. Reynolds, M. Y. McMurray, J. P. Adams, S. L. Caruthers and S. P. Harris are the incorporators.

WOODBURY, TENN.—Articles of incorporation have been filed for the Home Telephone Company, of Woodbury. The capital stock is placed at $5,000, and the incorporators are: Jesse Davenport, L. H. McCrary, J. P. Wood, Walter Hancock and others.

HAPPY, TEX.—The Happy Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are:

VILASCO, TEX.—The Brazos Telephone Company is the name of a new corporation formed in this town. D. A. Todd, C. J. Mackey and L. T. Mackey are the incorporators. The capitalization is $10,000.

WARWICK, W. VA.—A new company recently organized at this place is the Marlinton and Cloverlick Mutual Telephone Company. John A. Beverage of Cloverlick, A. N. Barlow and Geo. W. Allen of Warwick, and several others, are the incorporators.

WOODSTOCK, VT.—The Woodstock Telephone Company has filed articles of incorporation for the constructing and operating of a system in Windsor county. The articles are signed by about 40 men in and about Woodstock, and the capital is placed at $5,000.

UNDERWOOD, WASH.—The owners of all telephones on a Mutual Farmers' line met and organized and incorporated the Underwood Telephone Company. The officers of the company are: President, W. F. Cash; vice-president, Henry K. Love; secretary-treasurer, Hugh W. Hamlin. The board of trustees consists of the officers and F. S. Forrester and A. J. Haynes.

ALTO, WIS.—The Eastern Alto Telephone Company has been incorporated with a capital stock of $4,000. The incorporators are William Smits, John Frericks, Garry Wellhouse and R. Kastein.

FOREST JUNCTION, WIS.—The Calumet Telephone Company has been incorporated by William Hulkes and five others. The capital is placed at $3,500.

ALLAN, SASK., CAN.—The Allan Rural Telephone Company has been organized, with the following directors: W. F. Vauder, F. B. Williams, R. E. Beaver, M. Loran, W. E. Redick, Stanley Bowser, F. B. Doane. Construction work will commence at once.

DUNDURN, SASK., CAN.—The Wall Lake Rural Telephone Company has been incorporated, with headquarters in this town.

MAPLE CREEK, SASK., CAN.—The Bay Creek Telephone Company has been incorporated, with headquarters in this town.

ROULEAU, SASK., CAN.—The Riverside Rural Telephone Company is the name of a new company which has been incorporated. Rouleau will be the principal place of business.

FINANCIAL.

GRAND RAPIDS, MICH.—The Citizens' Telephone Company, at a recent meeting, declared the payment of its 48th quarterly dividend of 2 per cent. This disbursement will call for about $63,000. It is reported that when two more dividends have been paid the original stockholders will have received back in dividends an amount equal to that which they paid in.

LINCOLN, NEB.—Mr. F. H. Woods, president of the Lincoln Telephone & Telegraph Company, successor to the Lincoln Telephone Company, recently applied to the Railroad Commission for permission to issue $100,000 new stock. July 3 the company had outstanding stock to the amount of $555,425; but the expenditure of $145,000 is needed now. To issue new stock, under the law passed last winter at the suggestion of the Governor, the consent of the Commission is necessary.

ALBANY, N. Y.—The Albany Home Telephone Company has declared a quarterly dividend of 1 per cent.

NITTANY, PA.—A meeting of the Nittany Telephone Company was held at Bellefonte a short time ago and the directors declared a 3 per cent semi-annual dividend. The company is planning some construction and extension of its system.

CHARLESTOWN, W. VA. — The Jefferson County Telephone Company has increased its capital stock from $25,000 to $35,000.

CHARLESTON, W. VA.—The capital stock of the Jefferson County Telephone Company has been increased from $25,000 to $35,000.

CONSTRUCTION.

GLOBE, ARIZ. — The Consolidated Telephone & Telegraph Company is building a toll line to Superior, which will be completed by about the end of July. This line will give direct service to Tucson and will connect many places 'round about there. A new switchboard is to be installed in Globe, having a capacity of 800 single lines.

CRYSTAL LAKE, ILL.—The Western Electric Telephone line, from Britt to this place, has been turned over to the Rural company. Farmers' lines will be added to it, and long-distance business will be placed over the other long-distance line belonging to the Rural company.

TAMPICO, ILL.—The Tampico Farmers' Mutual Telephone Company is the name of a new company organized at this place and capitalized at $10,000. E. A. Emmons, Charles W. Foy and Levi Lutens are the incorporators.

CRAWFORDSVILLE, IND.—The work of enlarging and improving the Home Telephone Company's exchange building is progressing rapidly. The lines will be extended and several miles of conduits laid during the summer.

DECKER, IND.—The White River Valley Telephone Company, capitalized at $10,000, has incorporated to build and operate a telephone system in Knox County, with principal offices and exchange in Decker. Richard Ready, J. F. Breithaupt and D. N. Lane are the directors of the new company.

FT. WAYNE, IND.—The directors of the Home Telephone Company have decided to enter upon the work of constructing additional toll lines to Eastern points at once. This company is having a great run of prosperity.

MARTINSVILLE, IND.—The Citizens' Telephone Company has decided to erect a new exchange building and will install modern equipment.

SOUTH BEND, IND.—The South Bend Home Telephone Company will soon begin work on many extensions to its underground system, involving the expenditure of about $45,000. It is expected that within a year an exchange will be installed in the southern part of the city.

TERRE HAUTE, IND.—The New Long-Distance Telephone Company, of Indianapolis, which already has a number of toll circiuts extending to Terre Haute, is installing an additional circuit on its pole lines to take care of the increasing demand for toll service. This company connects with the Citizens' Independent Telephone Company of this city, and by means of this connection gives all other Independents in Vigo and adjoining counties an outlet for toll service.

BAXTER, IA.—The Baxter Telephone Company has just rebuilt its exchange at this place, installing about 3,000 ft. of cable, and is building a metallic toll line to Newton, Ia.

DES MOINES, IA.—The Mutual Telephone Company will spend about $25,000 in improving its service. A semi-automatic switchboard will be installed at Highland Park, a suburb.

EARLHAM, IA.—The Hawkeye Telephone Company is making many improvements to its system. A new switchboard is being installed in the exchange and all wires will be placed in cables.

KEOKUK, IOWA.—The Mississippi Telephone Company is arranging to improve and extend many of its lines.

MARENGO, IOWA.—The Marengo Telephone Company will expend about $1,400 in installing more cable work in its system. This will greatly improve the service, doing away with much of the open-wire trouble.

ROSE HILL, IA.—A new switchboard is to be installed by the Oskaloosa Home Telephone Company in its exchange in this place.

SCOTTSVILLE, KAN.—The Home Telephone Co. has arranged to purchase the lot north of the present central building, and will construct a new building this fall.

DEMOCRAT, KY.—The Upper Rockhouse & Beaver Creek Telephone Co. are arranging for the early construction of a local telephone line from Democrat via Millstone Creek to Baker, Ky., where connection will be made with the Letcher County Home Telephone Company's lines; also the Eastern Kentucky Home Telephone Company's lines from Pikeville, Ky.—two important connections. Dr. T. A. Cook is manager of the company.

HINDMAN, KY.—The Hindman Telephone Company is improving its system in the country and city, installing a new switchboard and making many other improvements. A new line will be built from Hindman to Sassafrac, Ky., where connections will be made with the main line.

SERGENT, KY.—The Letcher County Home Telephone Company will soon build a connection to its main line to Wright, Ky., connecting at Vilas. Construction on this line will begin almost immediately. W. B. Webb is manager of this company.

WHITESBURG, KY.—The Whitesburg Telephone Company will build a metallic line from Whitesburg via Eolia, Frank's Creek and Black Mountains to Stonega, Va., in the coal fields, from where long-distance connection will be had with Big Stone Gap. Mr. James P. Lewis is manager.

BUTTE, MONT.—Owing to the steady and rapid growth of business, the Montana Independent Telephone Company has again found it necessary to make considerable extensions to its lines and system generally. Several new sections of switchboard are in the process of manufacture, and will be installed as soon as completed. It is reported that over 200 names are on the waiting list. The lines to Bozeman and Billings have been completed and arrangements are now being made to extend into the Bitter Root Valley.

RICHTON, MISS.—The Richton Telephone Company has applied for a charter, capital stock to be $10,000. C. H. Stevens, Willis Welley, E. A. Emery and P. M. Anderson are the incorporators.

GRAFTON, N. D.—A co-operative telephone company was organized, composed of about fifty farmers who reside in Grafton and Fertile townships. The officers of the new company are: A. Midgarden, president; Thor Thorson, secretary; T. Fisher, Mons Monson, Ole Groven, R. M. Vigness, Chester Thompson, H. Lein and Henry Lee are the directors.

STREETER, N. D.—The Dakota Central Telephone Company will soon construct about 40 miles of new telephone line.

HOOD RIVER, ORE.—The Hood River Telephone Company intends to extend and improve its system to the extent of about $75,000.

ANGELICA, PA.—At a meeting held by the Enterprise Telephone & Telegraph Company of New Holland, the directors decided to erect a line to this place.

WHITE ROCK, S. D.—The White Rock Telephone Company will shortly construct about 30 miles of telephone lines, and will install a number of telephones.

WAUSAU, WIS.—The Wausau Telephone Company will soon erect a new exchange building and four new cables will be added to the present system.

ELECTIONS.

PETERSBURG, ILL.—The stockholders of the Petersburg Telephone Company met in annual session recently and the following directors were elected: H. H. Colby, A. D. Colby, J. S. Hurie, D. W. Frackelton, T. M. Scott, T. W. McNeeley, E. B. Overshiner and J. H. Sullivan. The directors elected as officers: President, D. W. Frackelton; vice-president, T. M. Scott; treasurer, J. S. Hurie, and secretary and general manager, J. H. Sullivan.

ARCOLA, ILL.—The annual meeting and election of officers of the Aerial Transit and Telephone Company was held at Charleston recently and as a result of the election, Henry McCabe, Arcola, is president; W. J. Stevenson, Tuscola, vice-president; T. L. Galbreath, Charleston, secretary and treasurer. The board of directors consists of: Geo. Barricklow, John Croddy and Henry McCabe, of Arcola; Frank Osborne, of Hindsboro, and T. L. Galbreath and A. C. Anderson, of Charleston.

HOPE, IND.—The new purchasers of the Hope Independent Telephone Company met and organized by electing officers and directors, as follows: J. W. D. Aspy, president; Joseph Burney, vice-president; G. J. Dennison, secretary and treasurer; J. W. D. Aspy, Joseph Burney, Gilbert Dennison, Ardell Burney, Frank Tyner and A. J. McQueen, directors. This company will take charge of the plant the 1st of July, and it is reported that much improved service will be given, and many extensions made.

WILLMAR, MINN.—The annual meeting of the Kandiyohi County Telephone Company was held recently. The following directors were elected: H. B. Eddy, P. J. Haley, F. G. Handy, C. O. Bergquist, E. R. Rasmusson, John Wicklund, F. C. Peterson, J. H. Olson, J. Ed Nelson, Nels Anderson, A. M. Hedin and O. A. Norman. From the reports of the secretary and treasurer, the financial standing of the company showed a reduction of $1,028 on the company debt from last year's report. The board of directors met after the annual meeting and elected the following officers: Ed Nelson, president; H. B. Eddy, vice-president; E. R. Rasmusson, secretary and manager, and F. G. Handy, treasurer.

WAYNESBURG, PA.—The stockholders of the South Penn Telephone Company held their annual meeting recently, and elected directors for the following year, as follows: E. B. Throckmorton, J. W. Closser, W. D. Cotterell, T. S. Crago, B. N. Freeland, J. E. Debolt, Thomas Frye, Dr. T. N. Milliken, W. E. Scott, Harry Taylor and L. M. Wadell.

MISCELLANEOUS.

DELANO, CALIF.—Mr. J. C. Rutledge of Woody is interesting prominent business men of this place in the installation of a telephone line from Glenville to Delano, via Woody. A company will soon be organized and all necessary arrangements for building the line are being made.

MORRISON, ILL.—The exchange of the Interstate Telephone Company was damaged to a certain extent by a bolt of lightning entering the switchboard and causing a conflagration. The fire was extinguished by Miss Schrader, the night operator, who used a chemical apparatus.

HOLTON, KAN.—The stockholders of the American Independent Telephone Company recently voted to reorganize the company. At present the company has about $35,000 in preferred stock and half a million in common. The proposed reorganization will make the stock all on the same basis. The capitalization will be placed at $75,000. This move is made to put the company on a still sounder basis and to have all stockholders share evenly in all the business of the company. The company is reported to be in very good condition, the business constantly increasing.

LOUISVILLE, KY.—The new directory of the Home Telephone Company, recently issued, shows a good substantial increase in the number of subscribers to the service of the Independent company. Three branch exchanges have been established by this company, made necessary by the rapid growth of the company.

PLAINVIEW, MINN.—The Independent telephone companies in southeastern Minnesota have formed an association for their mutual benefit along certain lines, and among them is the purchase of materials and supplies. As secretary of the association Mr. James A. Carley of Plainview is the one to receive all quotations on supplies.

ALBANY, N. Y.—The New York Telephone Company has taken over the Westchester division of the Hudson River Telephone Company. The towns of Peekskill, Croton, Briarcliff and Haverstraw, involving about 5,000 telephones, will be served by the former company hereafter.

CORNING, N. Y.—The Corning Telephone Company, which is to be known hereafter as the Corning exchange of the Federal Telephone & Telegraph Co., has just issued its new directory which shows a substantial increase in the list of subscribers Eugene B. Kemp is the new manager of this exchange.

SARANAC LAKE, N. Y.—The Mountain Home Telephone Company's new directory shows a substantial increase in business. Just at present plans are being made for the extension of a line to Lake Placid, where an exchange will be installed.

BROWNWOOD, TEX.—The West Texas Telephone Company suffered the loss of its exchange building a short time ago by fire. The company is now at work on a temporary exchange, as it is very anxious to reinstall service in the city. Long distance service has already been re-established. The new switchboard is expected to arrive at most any time.

PORT ARTHUR, MAN., CAN.—The city council has agreed to buy the local plant of the Bell telephone company for $3,500, subject to the ratification of the ratepayers. This ends the contest between the company and the corporation, commenced some years ago by the invasion of the Bell concern.

FRANCHISES.

MUNDEN, KAN.—The Rydal Telephone Company has been granted a franchise to operate a telephone system in Munden.

BIRD ISLAND, MINN.—The village council of Olivia has granted a twenty-year franchise to the Bird Island Telephone Company, to install a modern telephone system in that town.

SHERIDAN, WYO.—A franchise has been granted an Independent telephone company headed by R. T. Durrett, for the construction of lines here. Long-distance lines will be built connecting Sheridan with Billings and the Basin country, besides the local system. This franchise was only granted after a vigorous fight by the competing company for its defeat.

What They Say About Us

Our idea in accepting and publishing the letters and articles written by our friends in the telephone business is to make their ideas useful to men throughout the entire field. We intend to so select and arrange this material that each week every single subscriber will get information worth far more thans he pays for the paper. Now, we want to know whether we are doing this or not. We want to hear from individuals, and have each man tell us what he likes, and uses, and what he would like to see, but doesn't find. We want your help, so that we can make the paper as valuable to you, personally, as is possible. We like to know how far we succeed in approaching your own ideal of what a good, broad guage telephone paper should be, to cover the whole field, and give each part its due.

We get a good many expressions of opinion. Just to show you what other people think, we are reproducing a few here:

Mt. Pleasant, Mich.,
June 7, 1909.

Telephony Pub., Co.,
Chicago.

"One article on storage batteries published in a recent issue of TELEPHONY is worth more than the price of a year's subscription to your paper."

Yours very respectfully, C. L. Patee.

This kind of a letter shows that the writer puts his subscription on a business basis, where we want it.

The following letter is brief, but certainly encouraging:

Gainesville, Texas,
June 10th, 1909.

Telephony Pub. Co.,
Chicago.

"Yours is the best publication in the business." M. Anderson.

Another man writes:

Lawrence, Kan.,
May 8, 1909.

The Telephony Publishing Company, Chicago.

"I like your paper very much and have profited greatly from a weekly perusal of its pages. I would certainly recommend your paper to the man desiring to make a real study of the telephone business. Thanking you for your very courteous treatment, I am,"

Yours very truly, James F. Lawrence.

The men who find out things about their own work are our contributors. That is why a man who attempts to study the business finds what he wants in our pages. It is practical knowledge, developed and tested by experience.

Many people have been reading this journal ever since it existed. Here is the opinion of a man who has watched our work long enough to be very well acquainted with it:

Home Telephone Company of Covina, Covina, Cal., June 24, 1909.

The Telephony Publishing Company,
Chicago.

"The writer has been a reader of your paper for several years, and the benefits derived from this one source, measured by dollars and cents, are too numerous to mention. With best wishes, I am,"

F. H. Wright, Manager.

Sometimes subscribers think they haven't time to read a telephone paper. One man who tried this idea out sent the following testimonial to the value of TELEPHONY:

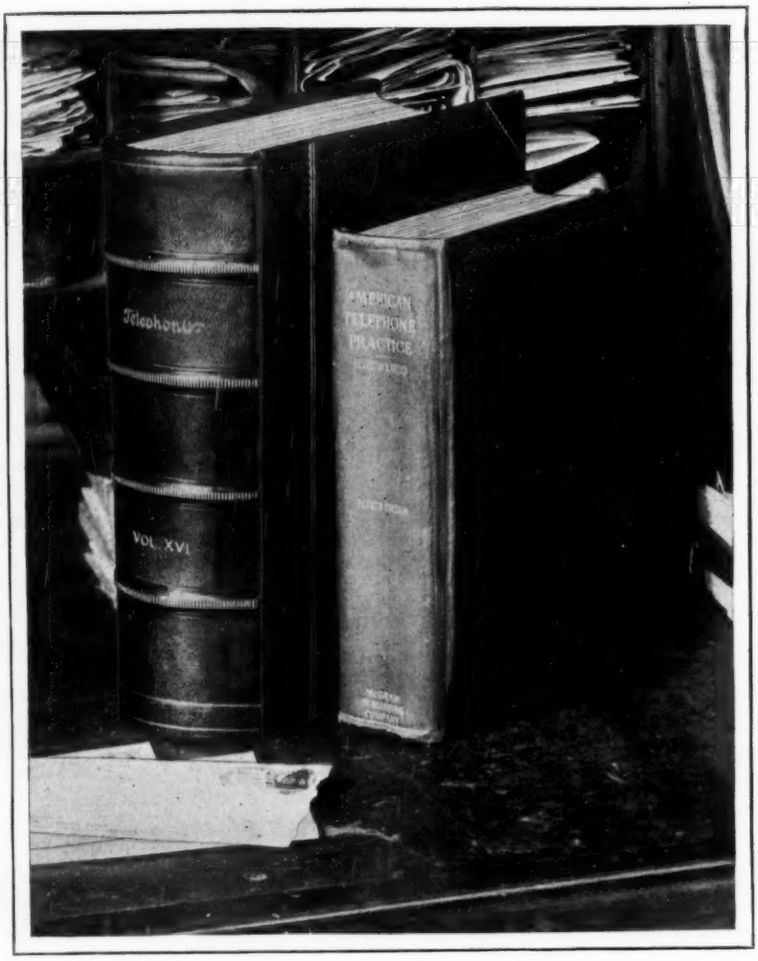
Musson Brothers Co.,
General Office,
Atlantic, Iowa, May 13, 1909.

Telephony Pub. Co.,
Chicago.

"Please send us our bill for subscription and we will pay up. We want your paper; we find we can not get along without it."

Very respectfully,
Musson Brothers Co.,
by F. C. Musson.

Naturally we would prefer to let the subscribers do the talking about TELEPHONY. It is their comments which are really valuable; but we cannot refrain from saying a few words about what a man gets for his subscription.



Two Standard Reference Books Which Every Live Telephone Man Keeps Close by Him.

The volume completed last January was for only one-half year. It is just about the size of the Webster's dictionary in our office, and it contains mighty near as many words, only more of them are found repeated in TELEPHONY than you will find duplicated in Webster. Another idea of the size of the book may be obtained by looking at the photograph, which shows it beside Miller's "American Telephone Practice," which costs four times as much, and is agreed by every telephone man to be worth the money.

The index for the volume shown covers 15 pages of fine print. The volume and the index furnish a reference work of permanent value, and the book, made up of the separate weekly papers, covers a range from information about practical problems of the smallest telephone lines to matters of general development and of interest to operators and employes of the largest systems. Practically the whole field of telephony—technical, commercial and legal,—is touched upon in a way which will be helpful to any man actually interested in his work.